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NOAA Technical Report NMFS SSRF- 742

WATER STRUCTURE AT OCEAN WEATHER STATION V NORTHWESTERN PACIFIC OCEAN, 1966-71

D. M. Husby and G. R. Seckel

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Water Structure at Ocean Weather Station V, Northwestern Pacific Ocean, 1966-71

D. M. HUSBY and G. R. SECKEL[1]

ABSTRACT

The oceanographic station data obtained at Ocean Weather Station V from 1966 to 1972 by the U.S. Coast Guard have been analyzed and are presented in a form suitable for water structure studies. Temperatures, salinities, and depths are given as a function of density (sigma-*t*). We used harmonic analysis as a curve-fitting technique, to obtain parameters for these properties as a function of time. The harmonic coefficients and interpolated values at the first of each month for the 6-year series are tabulated in an appendix.

We describe the temporal distributions of salinity and depth in terms of the oceanographic setting. At depths greater than sigma-*t* 26, temperature-salinity relationships remain relatively constant in time. Depth variations at these levels are attributed primarily to meanders of the Kuroshio Extension. The surface divergence, as reflected by changes in the depth of sigma-*t* 26, has no annual periodicity. The 6-year record shows that large baroclinic variability occurs at time scales of more than 55 days with largest variability occurring at the interannual scale.

Heat budget estimates show that the effects of local ocean-atmosphere exchange processes are obscured by advected properties. For example, the heat content of the layer above sigma-*t* 26 is primarily determined by the divergence of this layer and anomalies in the mean temperature are produced by heat advection rather than heat exchange across the sea surface.

INTRODUCTION

Monitoring and predicting ocean variability in the fishing areas of the eastern North Pacific are important problems facing the fishery oceanographer. In contrast to the global monitoring of the atmosphere at a network of stations every 6 h, there is no network of monitoring stations in the oceans. Oceanographers are therefore attempting to infer ocean variability from atmospheric forcing, i.e., the exchange of momentum, moisture, and heat between the atmosphere and ocean, that can be calculated from the regularly observed meteorological properties. The temperature structure in the upper layers of the ocean, for example, is affected by heat exchange and wind stress as well as by the changing current field and diffusion. Inferring ocean variability from atmospheric forcing, therefore, is not a trivial problem.

Conditioning of the water reaching the eastern North Pacific Ocean begins in the western North Pacific, an area characterized by a net annual heat loss across the sea surface (Husby and Seckel 1975). Thus, studies of the effects of heat exchange across the sea surface and wind stress on ocean properties and structure must be undertaken upstream of the fishing areas if predictions of anomalous water conditions are to be made. The only time series of concurrent meteorological and oceanographic data for use in such studies are those that were obtained at ocean weather stations. One of these, Ocean Weather Station V (OWS-V) was located at lat. 34°N, long. 164°E within the net annual heat loss area that is of concern to us.

At OWS-V meteorological observations were obtained from 1951 to 1972 and oceanographic station data from 1966 to 1972. The large-scale air-sea interaction processes derived from the station's meteorological data were described by Husby and Seckel (1975). Our work is a companion paper in which the oceanographic station data are presented in a form suitable for studies of the water structure. Temperatures, salinities, and depths at selected density (sigma-*t*) levels are analyzed and presented as a function of time. Harmonic analysis is used as a curve-fitting technique, to obtain parameters for these properties as a function of time. Results of the analyses are presented in Appendices I and II. Finally, the time variations in the distribution of properties, the water structure, are described in terms of the oceanographic setting at OWS-V.

PROCESSING PROCEDURES AND ANALYSIS

The Data

Oceanographic sampling at OWS-V began in January 1966 with daily Nansen bottle casts by the U.S. Coast Guard on alternate 3-wk patrols. In March 1968 the program was expanded to daily observations on each patrol. The temperature and salinity were sampled at the sea surface and at the depths of 10, 30, 50, 75, 100, 150, 200, 300, 400, 600, 800, 1,000, and 1,500 m. The observations and initial data processing methods were described by Husby (1968).

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[1] Pacific Environmental Group, National Marine Fisheries Service, NOAA, c/o Fleet Numerical Oceanography Center, Monterey, CA 93940.

From 1966 to March 1968 the sampling was intermittent (Fig. 1). Subsequently, until January 1972, daily sampling became nearly continuous with isolated gaps of up to 20 days. In addition to the temporal gaps, stations were occasionally occupied outside the nominal location, a 10 nautical mile (nmi) square centered on lat. 34°N, long. 164°E (Fig. 2). We, however, used all observations within a 60 nmi square centered on this location. Sixty-seven percent of the stations were occupied within the 10 nmi square and 95% within the 60 nmi square.

The oceanographic station data were obtained from the National Oceanographic Data Center (NODC) of the National Oceanic and Atmospheric Administration in two different formats: 1) temperature and salinity at observed and standard (interpolated) depths, and 2) temperature, salinity, and depth at increments of 0.2 sigma-*t* (σ_t) units between the surface and the deepest observation (isentropic format). A cubic spline interpolation function was used to obtain the values of temperature, salinity, and depth at the desired σ_t values.[2]

The Isentropic Format

The study of changes in water properties on surfaces of constant potential density or σ^θ, called isentropic analysis, was introduced to oceanography by Parr (1938) and Montgomery (1938) and has been a valuable tool in descriptive oceanography. The assumptions underlying isentropic analysis are that mixing or interchange of water masses on a constant density surface proceed with a minimum of change in the potential energy and entropy of the system and that surfaces of constant density are the preferred surfaces along which mixing occurs. The method has been used in the identification and tracing of water masses and also lends itself to the analysis of temporal changes in the water structure as was done, for example, at OWS-P by Tabata (1965). In order to pursue the latter aspect of isentropic analysis the temperature, salinity, and depth are presented as a function of σ_t in this report.

Quality Control of Isentropic Data

The initial step of quality control is concerned with the interpolated temperatures and salinities at designated σ_t values for each station received from NODC. The spline interpolation function calculates the temperature and salinity at designated σ_t values from the two relationships: 1) observed temperature versus σ_t and 2) salinity versus σ_t with σ_t as the independent variable. A σ_t value was computed from the interpolated temperature and salinity at each designated σ_t using the relationships (1) and (2). When the calculated σ_t differed from the designated by $> \pm 0.02$ σ_t units at more than one level, both interpolated and observed data were used to plot two temperature-salinity (T-S) diagrams for the station. The T-S curve drawn through the observed values together with the temperature-depth curve was used to correct the interpolated values obtained from the spline interpolation or to determine whether the station should be rejected. These quality control procedures frequently had to be used for values that were erroneously produced by the spline interpolation because of an inadequate sampling interval in the vicinity of the salinity minimum (σ_t 26.8). Out of a total of 1,067 stations, 496 stations were corrected during this quality control procedure.

Harmonic Analysis of Isentropic Data

Harmonic analysis was used as a curve-fitting technique to summarize the daily oceanographic data in a manner that lends itself to studies of temporal changes in the water structure. The resulting analytical expressions yield smoothed estimates of the water properties for any time of the analysis period.

Harmonic (Fourier) analysis was performed on the isentropic data for each year from 1966 through 1971 with a fundamental period of 366 days beginning on 1 January of one year and ending on 1 January of the next year. In these data sets, values at the beginning and end of the annual series were usually not equal and to facilitate the curve-fitting procedure the harmonic analyses were performed on the residuals produced by subtracting the linear trend (day 1 to day 366) from the observed value:

$$R(t) = f(t) - [f(1) + M \cdot (t - 1)] \qquad (1)$$

where $f(t)$ is the value of the property (temperature, salinity, or depth) at a constant σ_t at day t, and $t = 1$ to 366. The slope of the straight line fitted to the values at day 1 and day 366 is

$$M = [f(366) - f(1)]/365. \qquad (2)$$

The expression for the fitted curve then becomes

$$E(t) = f(1) + M \cdot (t - 1) + F_k(t) \qquad (3)$$

$$\text{where } F_k(t) = A_0 + \sum_n \left(A_n \cos \frac{2n\pi t}{T} + B_n \sin \frac{2n\pi t}{T} \right),$$

$$n = 1, 2, \ldots k \qquad (4)$$

is the Fourier series derived from the residuals, $R(t)$. The coefficients A_0, A_n, and B_n were evaluated by use of a standard computer program.

Data gaps in the time series were filled by linear interpolation between observed values in order to satisfy the program requirement of equal time intervals between data. When no observations were available for the first or 366th day of the year, data from the first (last) actual station of the year was extrapolated backward (forward) to the missing day. For the 1969 and 1971 analyses, the values for the first day were computed from a harmonic

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[2] Hamilton, D. 1973. Isentropic analysis and spline interpolation. Natl. Oceanogr. Data Cent. Tech. Rep., 29 p.

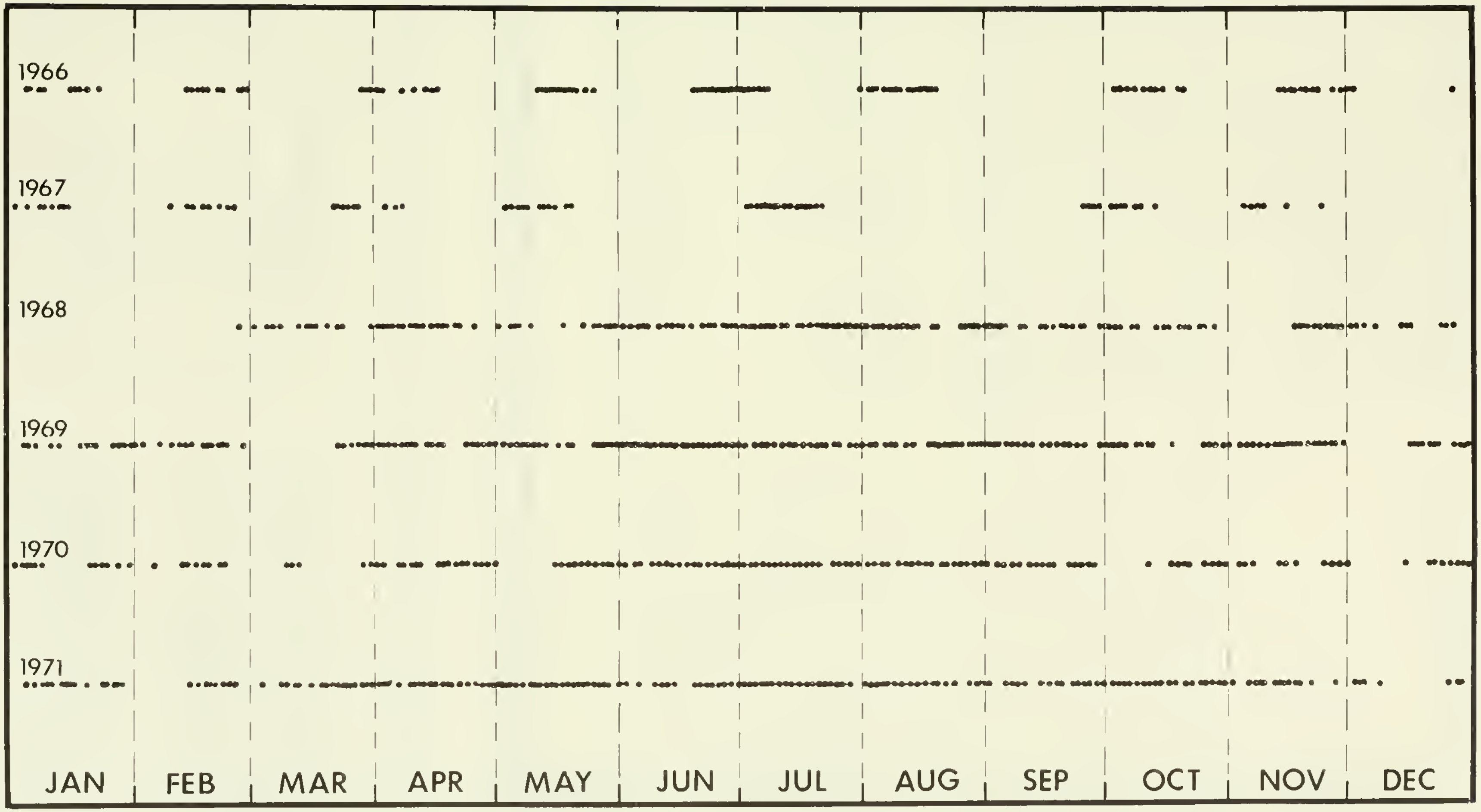


Figure 1.—Sampling record of daily oceanographic stations at Ocean Weather Station V, 1966-71.

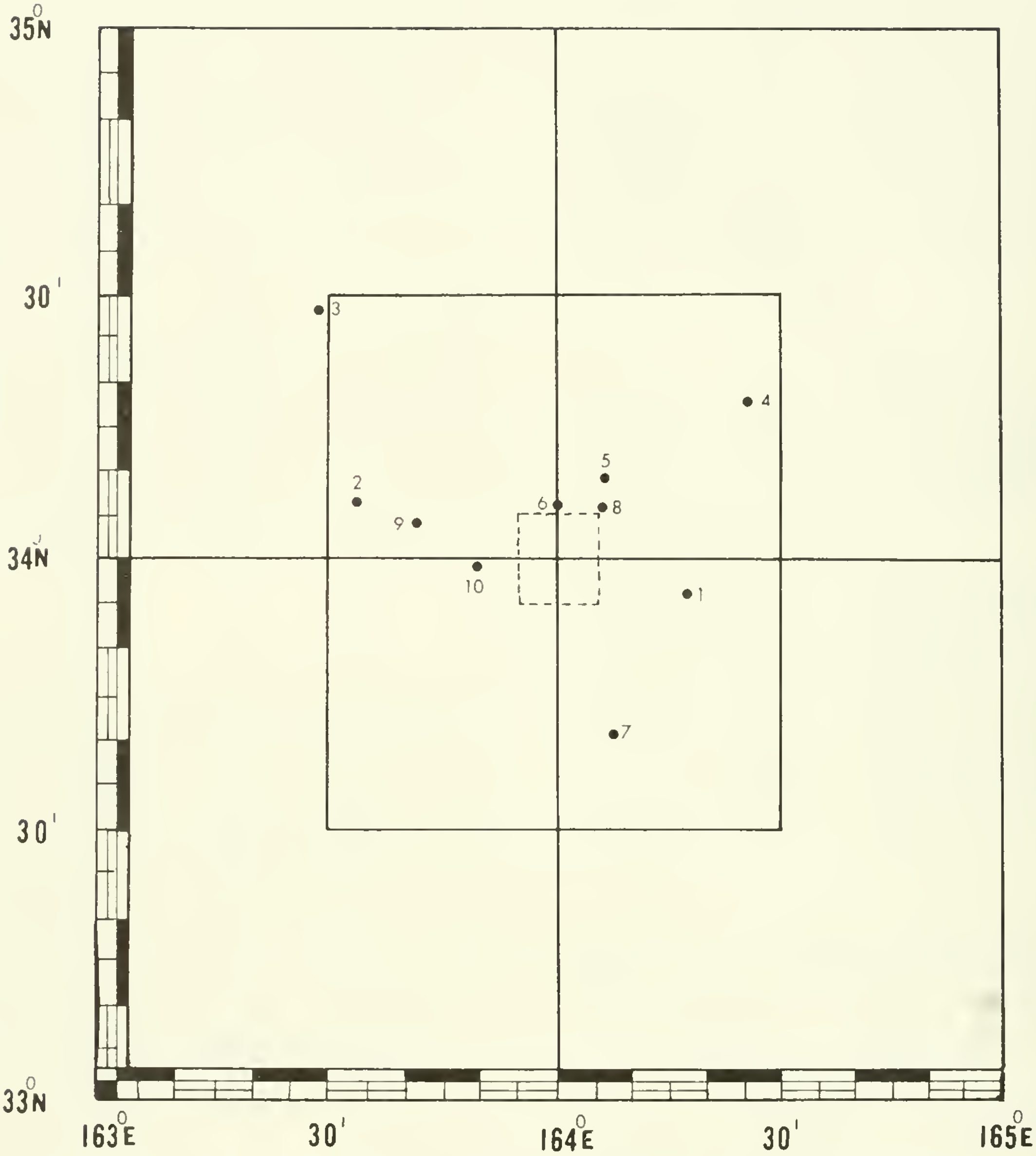


Figure 2.—Positions of oceanographic stations taken by U.S. Coast Guard Cutter *Chautauqua* at Ocean Weather Station V, 4-22 January 1966. Dashed line encloses a 10-nmi square and solid line encloses a 60-nmi square around Ocean Weather Station V.

analysis of the 366 day period beginning and ending on 2 July. There were sufficient data from July 1968 to July 1971 to use the expected values from these analyses as the interpolated values for the first days of 1969 and 1971 (Fig. 1). The values used for the 1st and 366th days of the annual analyses at each level are listed in Appendix I. Table 1 shows the manner in which these values were obtained.

Before proceeding with the harmonic analyses of the complete data set limited analyses were made as a quality control procedure. Harmonic coefficients were derived to the 12th harmonic for the salinity and depth series at the σ_t 26 and 27 levels of each year. Equation (3) was then used to evaluate and plot the fitted curve

Table 1.—Manner of obtaining first and last values in each of the annual harmonic analyses, 1966-71.

Year	Day = 1	Day = 366
1966	extrapolation from 4 Feb. 1966	observation on 1 Jan. 1967
1967	observation on 1 Jan. 1967	extrapolation from 24 Nov. 1967
1968	extrapolation from 1 Mar. 1968	harmonic analysis from 2 July 1968 to 2 July 1969
1969	harmonic analysis from 2 July 1968 to 2 July 1969	observation on 1 Jan. 1970
1970	observation on 1 Jan. 1970	harmonic analysis from 2 July 1970 to 2 July 1971
1971	harmonic analysis from 2 July 1970 to 2 July 1971	observation on 1 Jan. 1972

together with the isentropic data. Examples of these curves for 1967 (a year with large data gaps) and 1971 (a year with small data gaps) are shown in Figures 3 and 4.

Questionable values are revealed as large discrepancies from the fitted curve. The questionable values were usually associated with the previously mentioned poor vertical sampling interval at individual stations or with stations that were occupied outside the 60 nmi quadrangle about the nominal position of OWS-V (Fig. 2). Using this quality control procedure, 38 stations were rejected from the 6-yr series.

After this quality control procedure the harmonic coefficients were calculated for the temperature, salinity, and depth at σ_t levels between 22.0 and 27.4 with intervals of 0.2 σ_t units, as well as for the surface temperature, salinity, and σ_t. Although the analyses were carried out to the 52d harmonic, resolving fluctuations with a 7-day duration, only the first 12 harmonic coefficients are listed in Appendix I. Also listed are the slope M, and initial values, $f(1)$, for the linear trend at each level. Thus, using the values of Appendix I in Equation (3), expected values for any day of the year for any of the given levels can be obtained.

Because of the seasonal variation in the density of the upper layers, properties at the lower σ_t values will not occur throughout the year. For these situations the dates of the first and last observation are given in the tabulation of Appendix I and derived values will be valid only for the duration bounded by these dates.

Statistical Characteristics of the Harmonic Analyses

Figures 3 and 4 show qualitatively that the fitted curves follow the observed values very well, as they should, because a Fourier series approximation is a least squares fit regardless of the number of harmonics used in the summation (Jenkins and Watts 1968). A quantitative measure of the goodness of fit is provided by the unexplained variance,

$$S_e^2 = \frac{\sum_{t=1}^{T} [f(t) - E_k(t)]^2}{T-1} . \qquad (5)$$

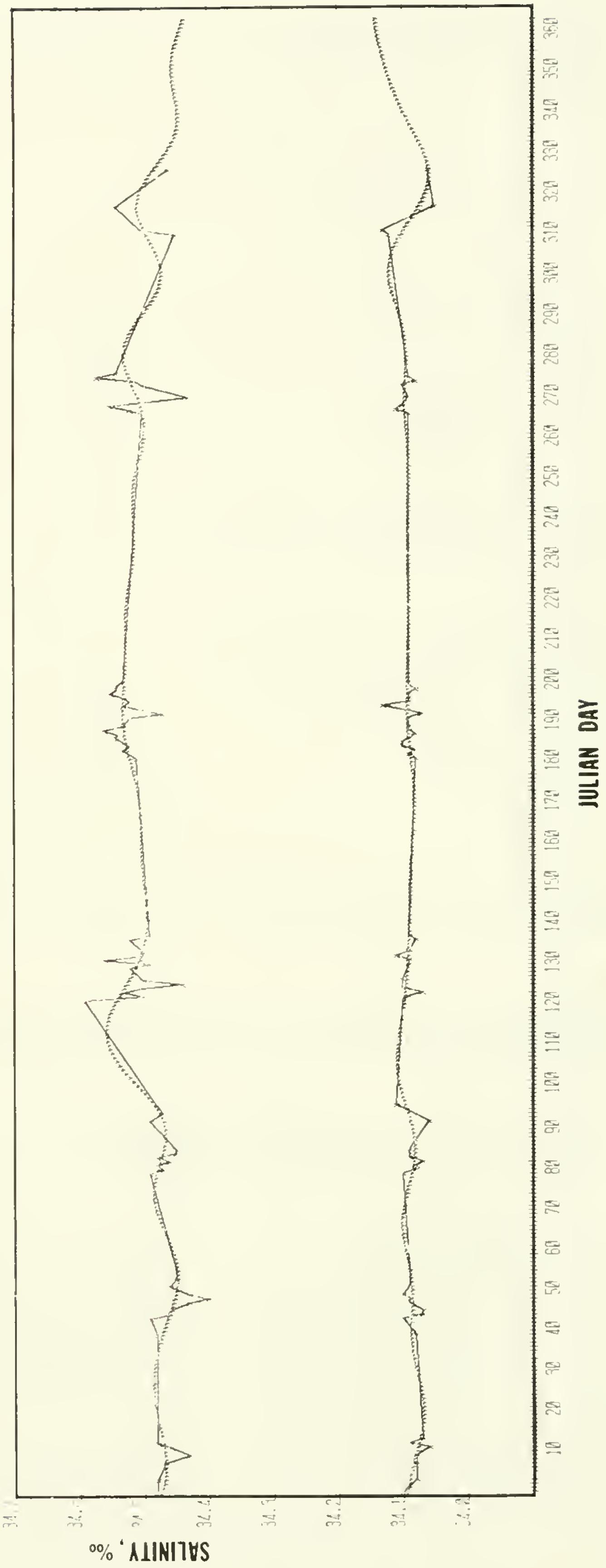
Equation (5) is an estimate of the mean square error or variance of the difference between the observed values and the Fourier series approximation. With an increasing number of harmonics used in the approximation, S_e, the standard error of the estimate, should decrease. These quantitative aspects are presented in Table 2 and illustrated in Figures 5, 6, and 7 by graphs of S_e as a function of the number of harmonics used in the analyses of the temperature, salinity, and depth for 1971.

Considering the temperature and salinity graphs (Figs. 5, 6) first, there is a marked reduction in S_e at the shallower levels as n increases to 6, S_e then decreases slowly with increasing n. For example, at σ_t 25.2, S_e for the temperature is 0.28°C at $n = 1$, 0.135°C at $n = 6$, and 0.12°C at $n = 20$. In the deeper layers the decrease in S_e with increasing harmonic used in the fitting procedure is relatively small. For example, at σ_t 26.4, S_e for the temperature is 0.13°C at $n = 1$, 0.115°C at $n = 6$ and 0.11°C at $n = 20$. The greater variability of the properties at the shallower levels may reflect, in part, low frequency variability in the air-sea interaction processes directly affecting the upper layer of the ocean to approximately the σ_t 25.8 level.

Figure 7 shows that the standard error of estimate for

Table 2.—Standard errors of estimate, S_e, for Fourier series summations ($n = 12$) on σ_t 25.0-27.4 levels of temperature, °C, (upper panel); salinity, ‰, (middle panel); and depth, m, (lower panel). S_e was computed only for times of actual observations, excluding interpolated values, 1966-71.

	Level												
Year	25.0	25.2	25.4	25.6	25.8	26.0	26.2	26.4	26.6	26.8	27.0	27.2	27.4
1966	0.070	0.079	0.114	0.080	0.080	0.103	0.118	0.129	0.144	0.093	0.067	0.059	0.060
1967	0.079	.082	.079	.059	.058	.058	.068	.085	.109	.089	.044	.037	.027
1968	.135	.124	.122	.086	.097	.091	.118	.151	.151	.116	.069	.069	.050
1969	.144	.131	.142	.119	.100	.128	.129	.132	.172	.157	.105	.067	.064
1970	.150	.115	.125	.099	.060	.059	.075	.102	.097	.093	.078	.047	.033
1971	.096	.123	.141	.144	.111	.081	.072	.110	.133	.128	.063	.087	.075
1966	0.022	0.025	0.034	0.022	0.020	0.026	0.026	0.024	0.026	0.016	0.011	0.008	0.008
1967	.026	.025	.023	.017	.015	.015	.016	.018	.019	.015	.008	.005	.004
1968	.044	.039	.038	.025	.026	.024	.028	.032	.029	.020	.010	.011	.008
1969	.046	.041	.042	.034	.027	.033	.031	.029	.032	.026	.016	.011	.011
1970	.047	.036	.037	.028	.016	.015	.017	.022	.018	.015	.011	.006	.005
1971	.030	.038	.041	.041	.030	.021	.017	.020	.024	.021	.009	.013	.010
1966	5.7	10.9	21.8	24.6	23.2	23.5	24.1	24.1	24.0	24.4	26.0	28.4	35.9
1967	9.1	8.6	13.6	22.7	26.4	24.0	20.9	19.5	18.0	22.1	19.9	17.9	23.0
1968	10.7	12.9	15.5	35.5	38.5	40.7	33.6	28.0	25.4	24.7	27.7	35.8	37.1
1969	8.1	13.8	21.7	29.8	32.6	31.6	25.6	23.5	24.0	21.0	22.2	23.9	22.8
1970	7.9	6.1	10.7	15.2	19.5	22.9	20.1	18.3	17.4	16.4	17.0	16.7	27.8
1971	5.2	11.8	15.6	27.4	29.7	24.8	23.0	22.2	19.2	19.3	19.6	20.7	25.9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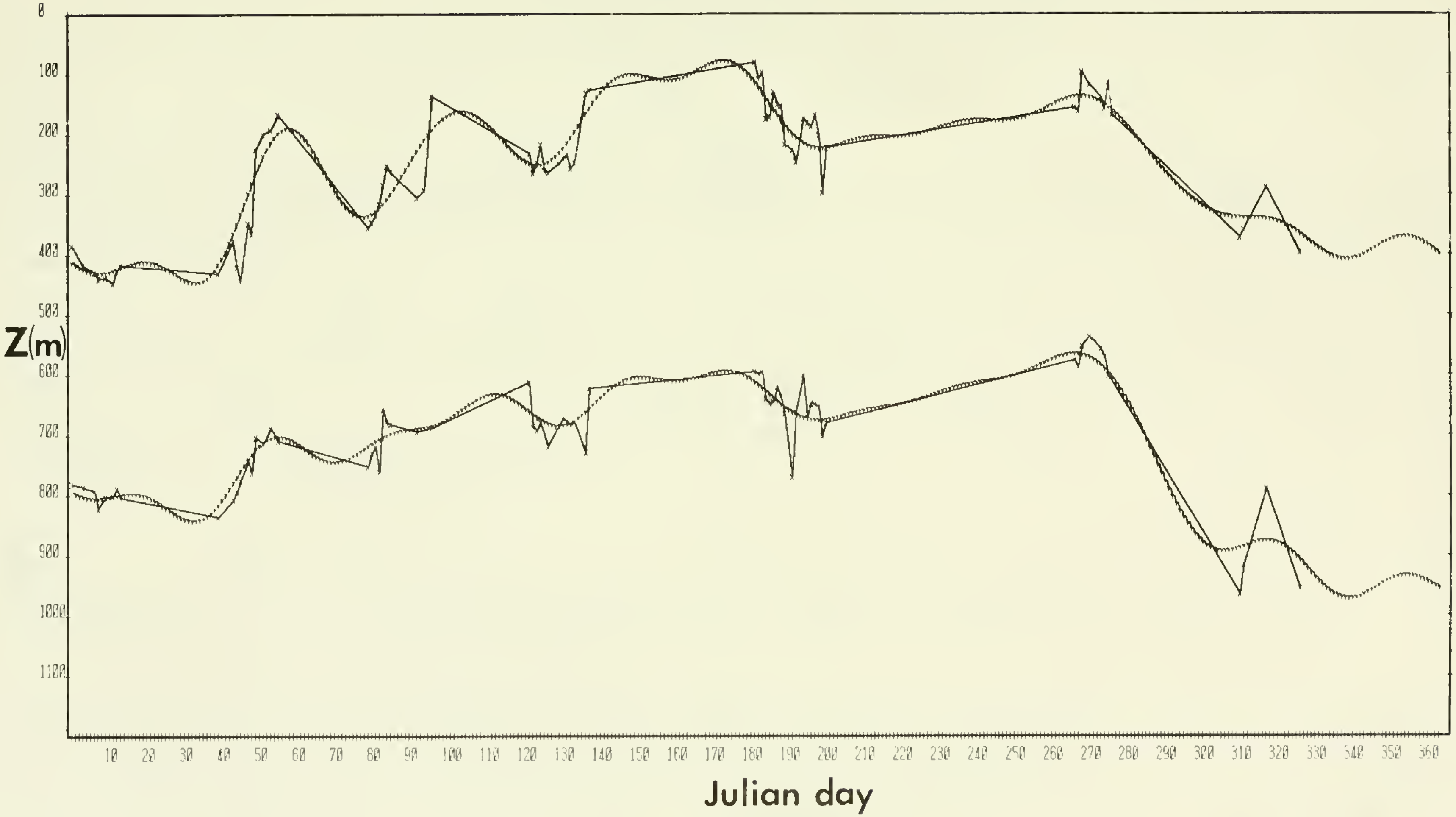
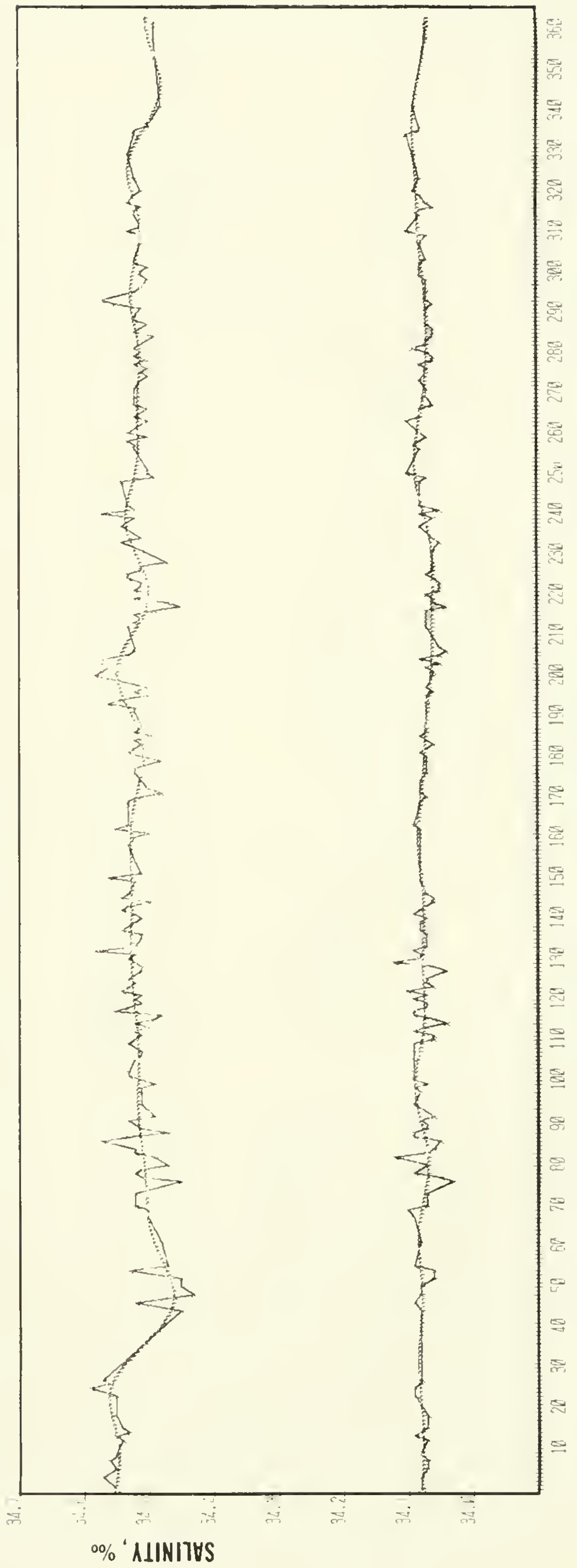


Figure 3.—Original salinity values (x--x) (upper panel) and original depth values (x--x) (lower panel) and expected values (y--y) from harmonic series (to 12th harmonic) at σ_t 26 (upper curves) and at σ_t 27 (lower curves) for the year 1967.



SALINITY, ‰
34.7
34.2
34.1
JULIAN DAY
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
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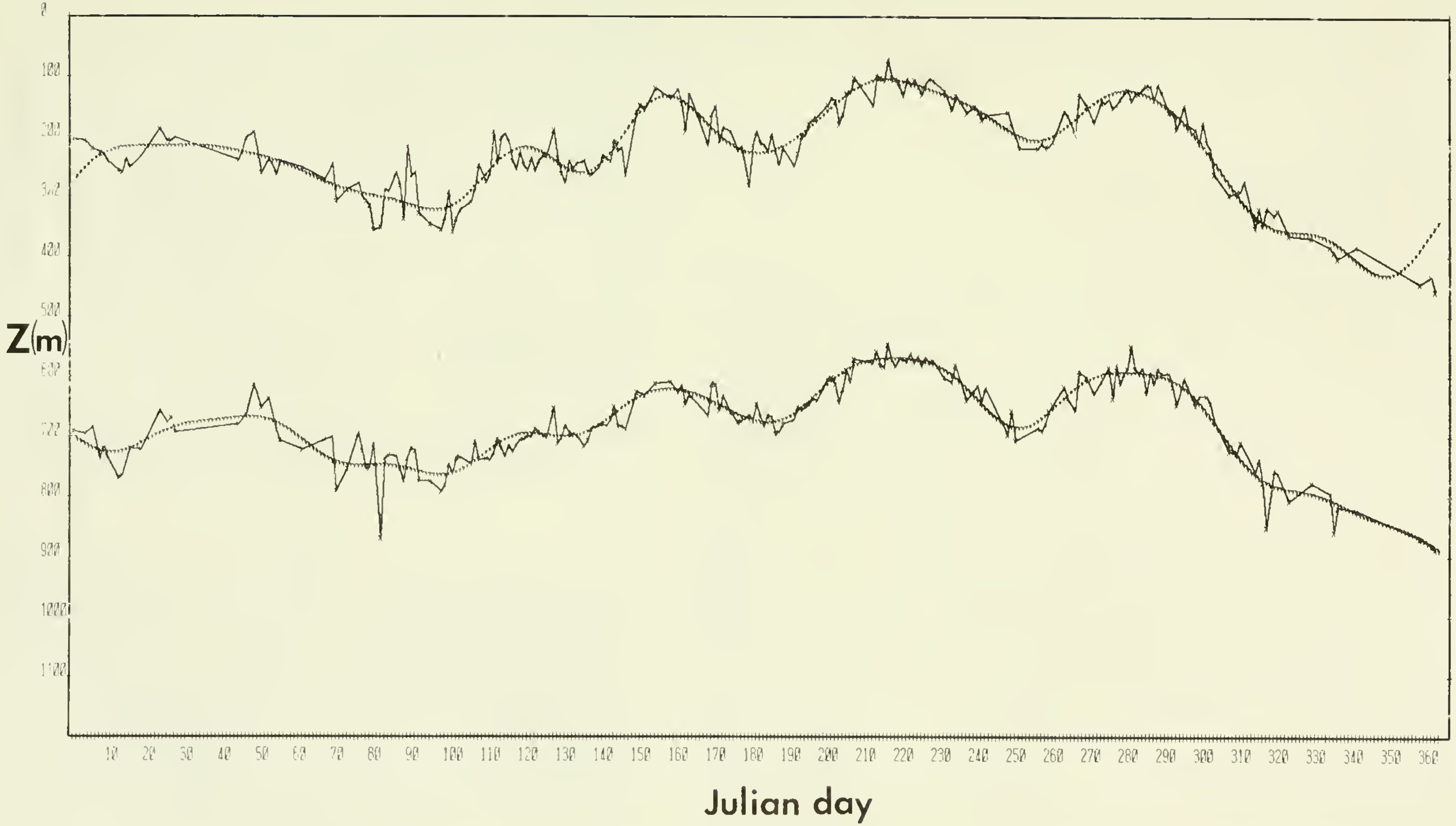


Figure 4.—Original salinity values (x--x) (upper panel) and original depth values (x--x) (lower panel) and expected values (y--y) from harmonic series (to 12th harmonic) at σ_t 26 (upper curves) and at σ_t 27 (lower curves) for the year 1971.

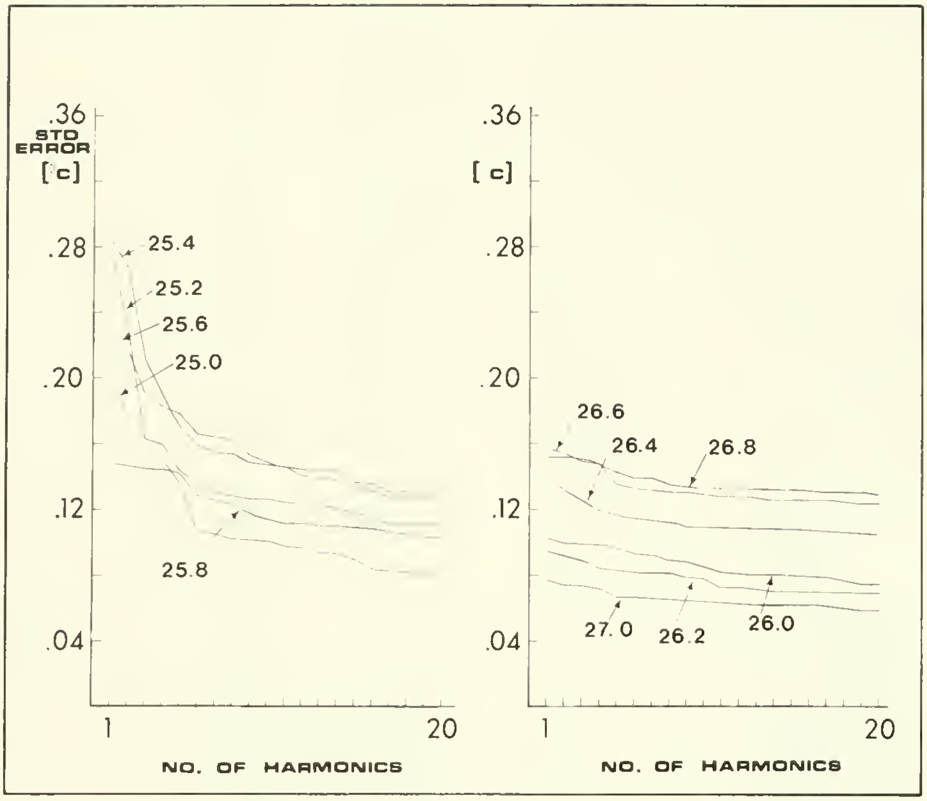
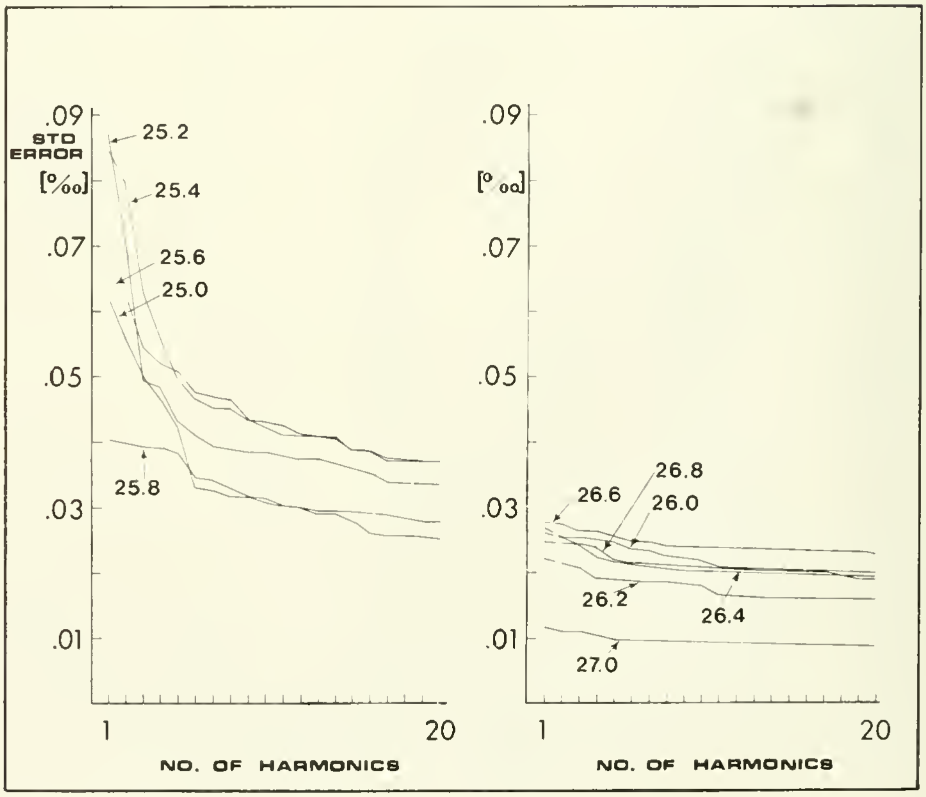


Figure 5.—Standard errors of estimate for harmonic fit of the 1971 temperatures at σ_t 25 to σ_t 25.8 (left panel) and at σ_t26 to σ_t27 (right panel).



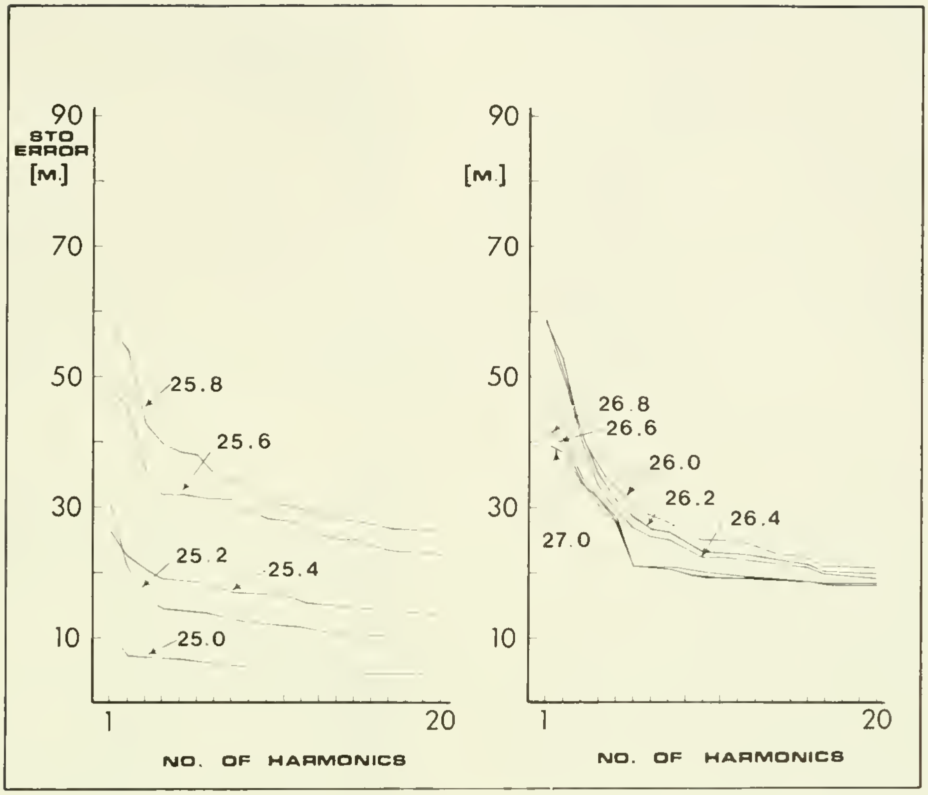


Figure 7.—Standard errors of estimate for harmonic fit of the 1971 depths at σ_t 25 to σ_t 25.8 (left panel) and at σ_t 26 to σ_t 27 (right panel).

the depth is relatively large at all levels for low harmonics. At the 26.0, 26.2, and 26.4 σ_t levels significant improvement in the standard error continues up to n = 10. Relatively high variance at σ_t 26.6, 26.8 and 27 for n = 6 indicates that low frequency baroclinicity, probably caused by eddies and current meanders, penetrates deeper than 800 m. S_e approaches an asymptotic value of about 20 m in the deeper σ_t layers indicating the magnitude of the residual variance associated with short-term variability and sampling error.

One would assume that the variance of temperature and salinity decreases with increasing σ_t. Figures 5 and 6 and the tabulated variances of the temperature and salinity (Table 2) show that this assumption is not correct. There is a tendency for S_e to decline from higher values in the upper layers to lower values at σ_t 25.8 or 26.2, then to rise again to higher values at σ_t 26.4, 26.6, or 26.8 before finally declining to the lowest values at σ_t 27, 27.2, and 27.4. In other words, the T-S relationships are less variable below the level of seasonal influence than in the deeper layers at and above the salinity minimum. The reason for this curious tendency may be the uncertainty in the T-S relationship introduced by the inadequate vertical sampling interval (200 m at σ_t 26.4-26.8) that was previously mentioned. It is also possible that the relatively large variance at the σ_t 26.4-26.8 levels reflects active mixing of water masses upstream.

Figure 6.—Standard errors of estimate for harmonic fit of the 1971 salinities at σ_t 25 to σ_t 25.8 (left panel) and at σ_t 26 to σ_t 27 (right panel).

Depths derived from the harmonic curve fitting can produce density inversions in the seasonal pycnocline during spring and summer months. These inversions are small and are due to the uncertainty of the harmonic fit being of the same order of magnitude as the depth increment between σ_t levels. The depth intervals between successive σ_t levels from the surface to the σ_t 25.2 level range from 1 to 5 m. The standard errors of estimate listed in Table 2 generally are larger than these values and range from 5 to 14 m. These uncertainties in the depth estimates are unavoidable with the method employed, but the errors produced in computations of the integrated properties of the water column, e.g., mean temperature or heat content, will not be large since the depth increments in the upper layer are so small. The levels producing inversions can be deleted in these computations without significantly affecting the results. For example, consider the mean temperature of the water column from the surface to the σ_t 26.0 level on 2 days at OWS-V representing summer conditions, 1 September 1969 (Fig. 8) and 1 July 1971 (Fig. 9). The expected depth values for 1 September 1969 revealed an inversion at σ_t 22.8 and 23.0. Deleting these two levels, the mean temperature was calculated to be 17.20°C, compared with a value of 17.24°C calculated from the

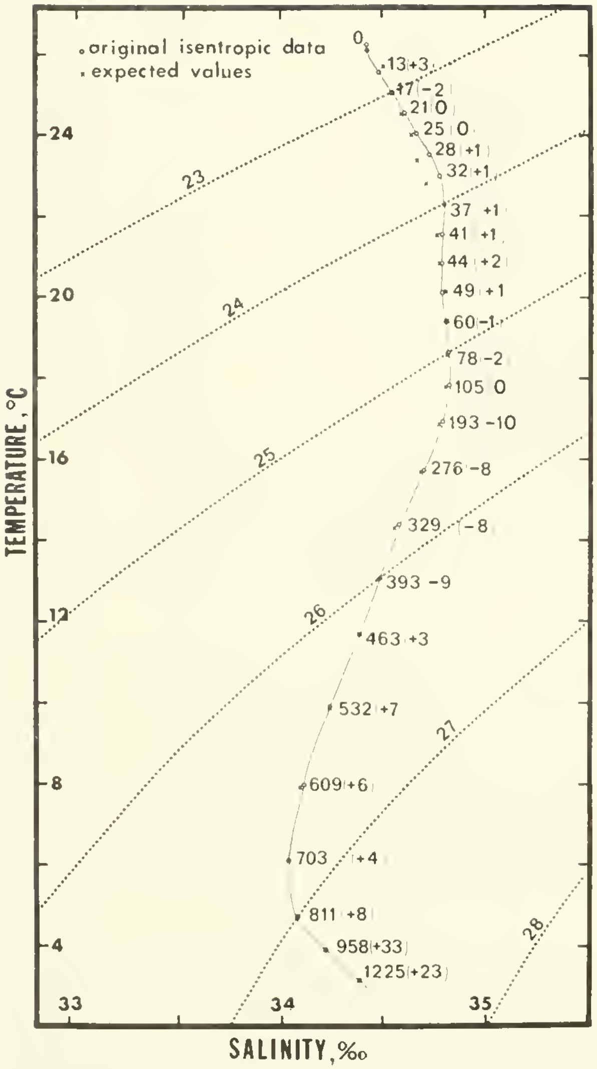


Figure 8.—Temperature-salinity diagram for day 244 (1 September 1969) based on original isentropic data (o) with temperature-salinity values from the harmonic fit (x). The numerals give the depth in meters for the original isentropic data. The numbers in parentheses represent the difference between the depth of the original isentropic values and those from the harmonic fit.

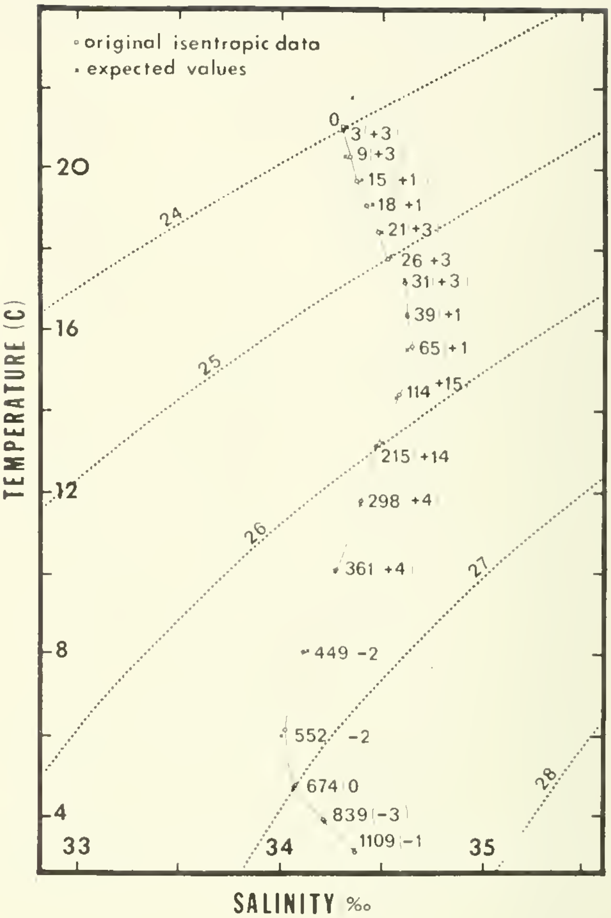


Figure 9.—Temperature-salinity diagram for day 182 (1 July 1971) based on original isentropic data (o) with temperature-salinity values from the harmonic fit (x). The numerals give the depth in meters for the original isentropic data. The numbers in parentheses represent the difference between the depth of the original isentropic values and those from the harmonic fit.

original isentropic data. For 1 July 1971 the expected isentropic values showed no inversions, but the comparison was made by deleting the σ_t 24.0 and σ_t 24.2 levels at 3 and 9 m, respectively, giving a mean temperature of 15.31°C, which was identical with that calculated from the original isentropic data and compared with 15.25°C before the data were deleted.

Sampling Gaps

Figure 1 shows that there were gaps lasting up to several months in the oceanographic data series. From 1966 to the winter of 1968 oceanographic stations at OWS-V were occupied only on alternate Coast Guard patrols. Subsequent to this time there were gaps of up to 3 wk in the series. The data gaps were bridged by linear interpolation, as previously described, solely to facilitate the analysis procedure. Therefore, although Equation (3) will provide interpolated values for the gaps, the significance of such values is limited. The limitation is related to the Nyquist frequency,

$$f = \frac{1}{2\Delta t} = \frac{n}{T} \tag{6}$$

specifying the highest harmonic to which, in theory, Fourier analysis can be carried out when the data interval is Δt (Jenkins and Watts 1968). Thus, with $\Delta t = T/2n$, the longest 1966 data gap of about 40 days permits interpolation if the summation in Equation (4) is carried out to $n = 4$. The longest 1967 gap of about 60 days limits meaningful summation in Equation (4) to $n = 3$.

The gap between day 325 of 1967 and day 55 of 1968 comprised almost 90 days. Again, in order to facilitate the analysis procedure the values for day 60 of 1968 were extrapolated backwards to day 1. Consequently, expected values for day 1 through day 60 have no validity. Interpolated values could have been obtained if the harmonic analyses were carried out from July 1967 to July 1968. A 90-day gap, however, permits meaningful summation only to $n = 2$ in Equation (3) which, as is evident from Figures 5, 6, and 7, would resolve only a small portion of the variance.

After the winter of 1968, the longest gap in the data series of about 20 days occurred in 1969, limiting significant interpolation for this gap to $n = 9$ in the summation of Equation (4). In general, all coefficients to $n = 12$ that are tabulated in Appendix I can be used to evaluate the harmonic function for time spans, including those in 1966 and 1967, where data gaps are 15 days or less.

Results of the Harmonic Analyses

Within the limitations discussed in the previous section the harmonic coefficients tabulated in Appendix I can be used in Equation (3) to obtain smoothed values of the temperature, salinity, and depth at any of the designated levels from the sea surface to σ_t 27.4. This calculation was performed and the results were tabulated in Appendix II for the first of each month of each of the years 1966 through 1971. The values for the 1966 and 1967 periods were computed by summing the harmonic series to the 3d harmonic, while the values for the succeeding years were computed to the 12th harmonic. In addition, the values for the 366th day for each analysis period are included to allow the month-to-month changes in properties to be computed for the entire year. Because harmonic analyses were performed for individual years, the expected values on the 366th day of one year may not match up with the corresponding values on the first day of the following year.

In order to facilitate the computation of dynamic heights at the surface and acceleration potentials at σ_t levels relative to 1,000 dB, interpolated temperatures, salinities, and σ_t values at 1,000 m are included in the tabulations of Appendix II.

OCEANOGRAPHIC CONDITIONS AT OWS-V

The Oceanographic Setting

In addition to heat exchange and wind induced flow processes, variability in surface properties and vertical structure is affected by shifts of the ocean system relative to the geographically fixed location, variations in the intensity of currents, and eddies. A description of the oceanographic setting of OWS-V, therefore, will aid qualitative interpretations of the low frequency oceanographic variations in the time series presented in this report.

OWS-V is located in waters downstream of the Kuroshio, called the Kuroshio Extension (Sverdrup et al. 1942). Summaries of the oceanographic conditions of this region have been given by Masuzawa (1972) and Kawai (1972). These articles supplement the earlier work of Fleming (1955), Muromtsev (1958), Uda (1963), Barkley (1968), and others.

The surface distributions of temperature and salinity of the North Pacific Ocean have been presented in numerous atlases and other publications such as that produced by the Japan Hydrographic Association (1975). These show that isopleths of temperature and salinity are generally zonal in the vicinity of OWS-V. Meridional temperature gradients range from about 0.4°C per degree of latitude in summer to 0.9°C per degree of latitude in winter. Salinities at OWS-V tend to be highest in late winter and early spring when the meridional gradient is about 0.04‰ per degree of latitude. Lowest salinities occur from July to October when the meridional gradient is about 0.09‰ per degree of latitude.

Charts of the dynamic topography of the North Pacific Ocean prepared by Reid (1961) and Wyrtki (1975) show that OWS-V is located in the eastward extension of the Kuroshio. These charts, however, are based on smoothed, long-term averages and do not exhibit the nature of the flow near OWS-V that materially affects the variability of oceanographic properties at the station. The dynamic topography presented by Kawai (1972), based on observations during the summer and fall of 1957, is reproduced in Figure 10. The tightly packed isopleths of dynamic height show the meandering nature of the Kuroshio Extension between lat. 32° and 38°N. Eddies abound both to the south and to the north of this current.

The existence of eddylike features associated with the Kuroshio current system has been well documented in the literature. The confluence area of the Kuroshio and Oyashio has been called the "Transition Area" by Uda (1938) or the "Perturbed Area" by Kawai (1972). Barkley (1968) drew attention to the eddy structure of this area, and Bernstein and White (1977) have shown that the baroclinic mesoscale eddy energy in this area is an order of magnitude higher than that east of long. 170°W.

In the illustration (Fig. 10), OWS-V is located within the meandering current. It is conceivable that at various times the current could pass either to the north or to the south of the station, but OWS-V would remain in an area of eddy-induced variability. This variability makes analysis of the vertical temperature and salinity distribution difficult if these properties are presented as a function of depth. However, if these properties are presented as a function of density (isentropic format) current and eddy-induced variability is reflected only in the depth distribution of isopycnals.

Meridional and zonal sections of the salinity and depth as a function of σ_t are useful in describing the baroclinic setting. A meridional section of hydrographic stations was occupied in April 1971 at long. 168°E (Roden 1972). Although this section lies to the east of OWS-V, it reflects the characteristic meridional distributions to be found at the longitude of the station. The dominant feature in the salinity section (Fig. 11, upper

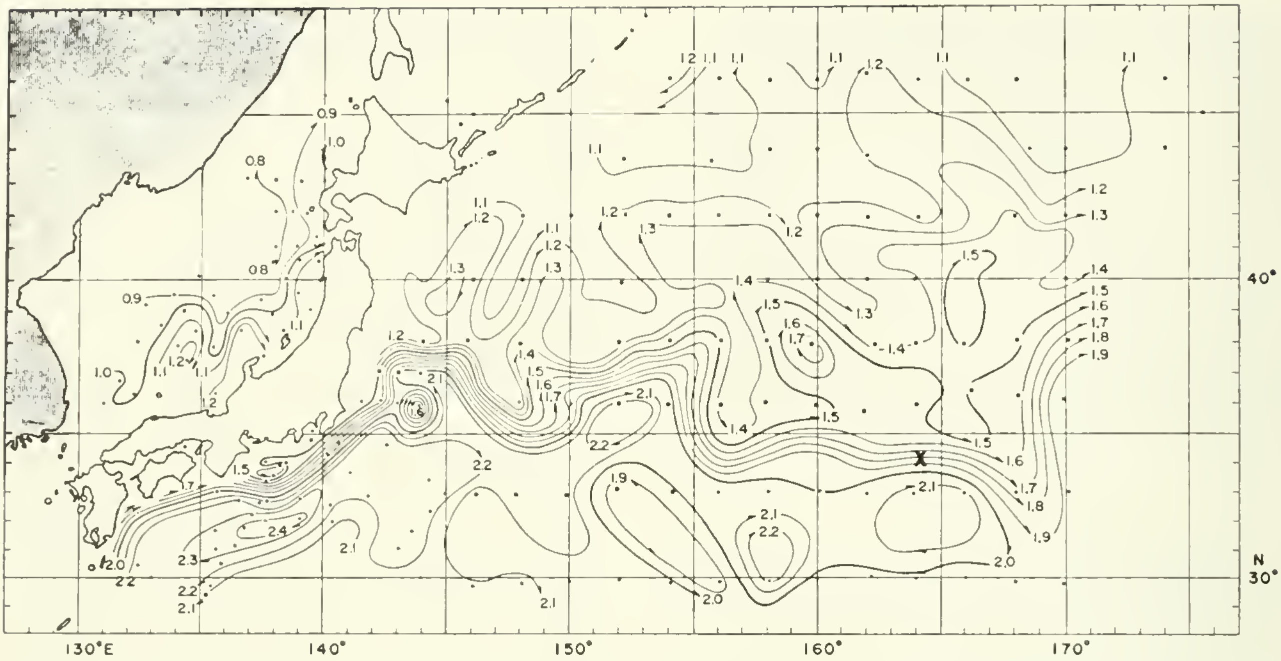


Figure 10.—Dynamic topography (dynamic meters) of the sea surface relative to the 1,000 decibar surface derived from selected stations during the summer of 1957 (from Kawai 1972). The location of Ocean Weather Station V is denoted by an "X".

panel) is the constancy of σ_t of the salinity minimum layer. This layer protrudes southward from the subarctic front between lat. 41° and 42°N and is identified with the North Pacific intermediate water (Sverdrup et al. 1942; Reid 1965). During the time of this section, at the latitude of OWS-V, the salinity decreased monotonically from the surface to the depth of the salinity minimum. Farther south, however, shallow salinity maxima occurred.

The distribution of depth as a function of σ_t in the section (Fig. 11, middle panel) reflects the baroclinicity of the zonal flow and embedded eddies. The bottom panel of Figure 11 shows that the principal zonal geostrophic flow occurs between lat. 29° and 35°N. Given the meandering nature of this current (Fig. 10) it is possible that the vertical density structure at OWS-V may be similar to that found within, to the north, or to the south of the current.

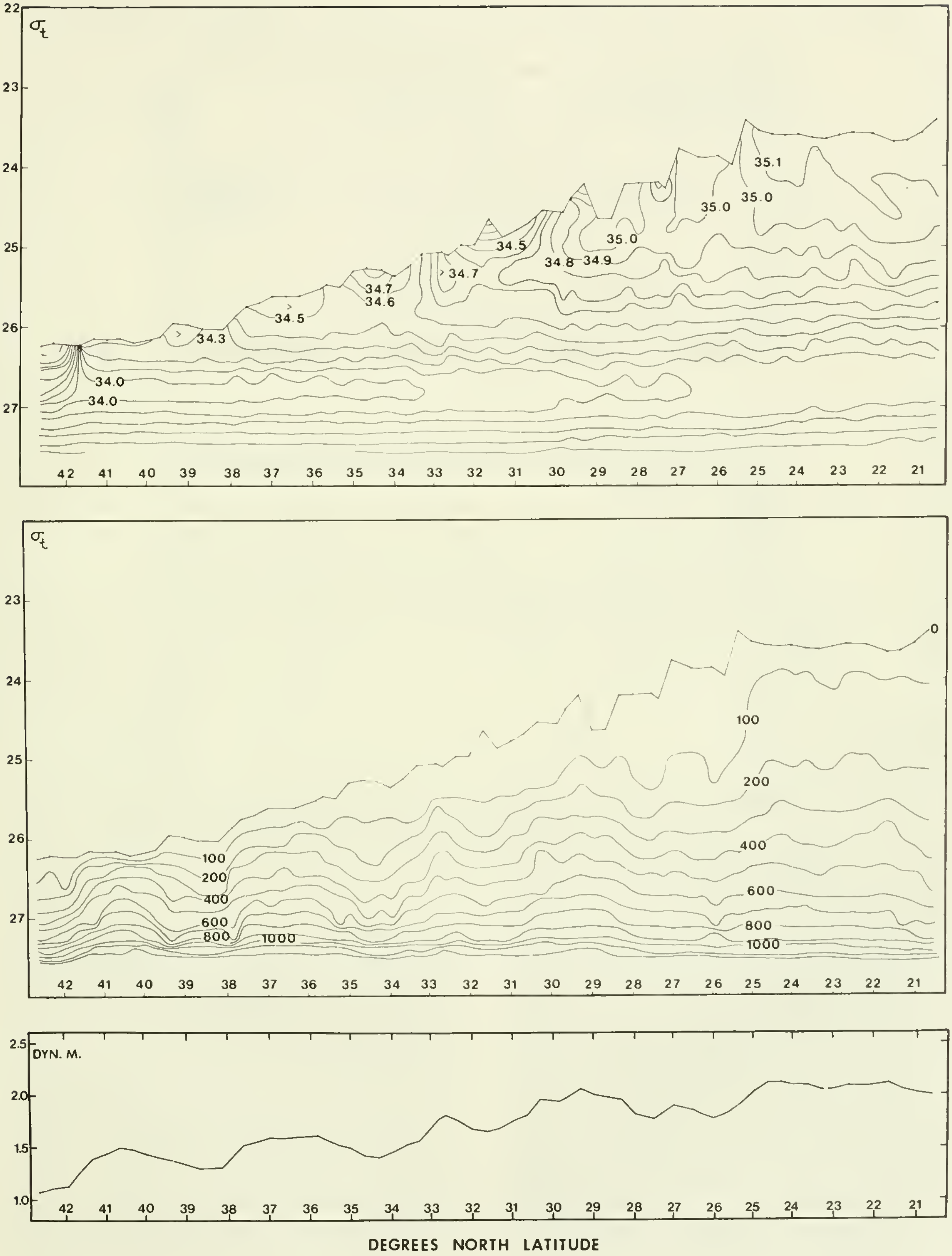
Useful zonal sections have been produced by Masuzawa (1972) from a selection of 18 stations during the summer season on the south side of the Kuroshio and Kuroshio Extension. The distribution of thermosteric anomaly versus depth and salinity versus thermosteric anomaly are reproduced in Figure 12. [Surfaces of thermosteric anomaly are parallel to surfaces of σ_t (Montgomery and Wooster 1954).] The middle portion of this section from long. 130° to 170°E runs along approximately lat. 32°N. Note the differences in the distribution of salinity above σ_t 26.0. East of long. 165°E the highest salinities occur at or near the surface, identifying the North Pacific central water. West of long. 160°E a shallow salinity maximum occurs at about σ_t 25. This subtropical water structure with relatively low salinity surface water is characteristic of the Kuroshio during summer (Masuzawa 1972). At the longitude of OWS-V, the thermosteric anomaly of 200 cl/*t* (about σ_t 26) is at 500 m (Fig. 12), but at long. 168°E and at the same latitude as OWS-V σ_t 26 is near 200 m (Fig. 11). This difference is consistent with the meanders of the current shown in Figure 10.

Variability and Structure 1966-71

The seasonal variability of the sea surface temperature and salinity for the 6 years of hydrographic observations are shown in the T-S diagrams of Figure 13. Six-year averages provide the reference T-S relationships with temperatures ranging from about 16°C in March to 26°C in August and salinities ranging from about 34.73‰ in April to 34.43‰ in September. Departures from the average pattern during each year appear to be more pronounced in the salinity than in the temperature. For example, from June to December 1966 salinities were up to 0.2‰ higher. Higher salinities also occurred during spring and early summer of 1968. Salinities were lower than the average during much of the summer and fall of 1969 and again from June to August of 1971.

A major departure from the average temperature, lasting several months, occurred in 1969-70. Temperatures were 1°C or more below average from

Figure 11.—Meridional sections, lat. 21° to 42°N, long. 168°E, based on 67 STD stations occupied 3-11 April 1971. Upper panel: Salinity (‰) vs. σ_t values. Middle panel: Depth (m) vs. σ_t values. Bottom panel: Dynamic topography (dyn. m.) at the sea surface relative to 1,000 decibar surface.


σt
22
23
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34.5
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42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21
σt
23
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42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21
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DEGREES NORTH LATITUDE

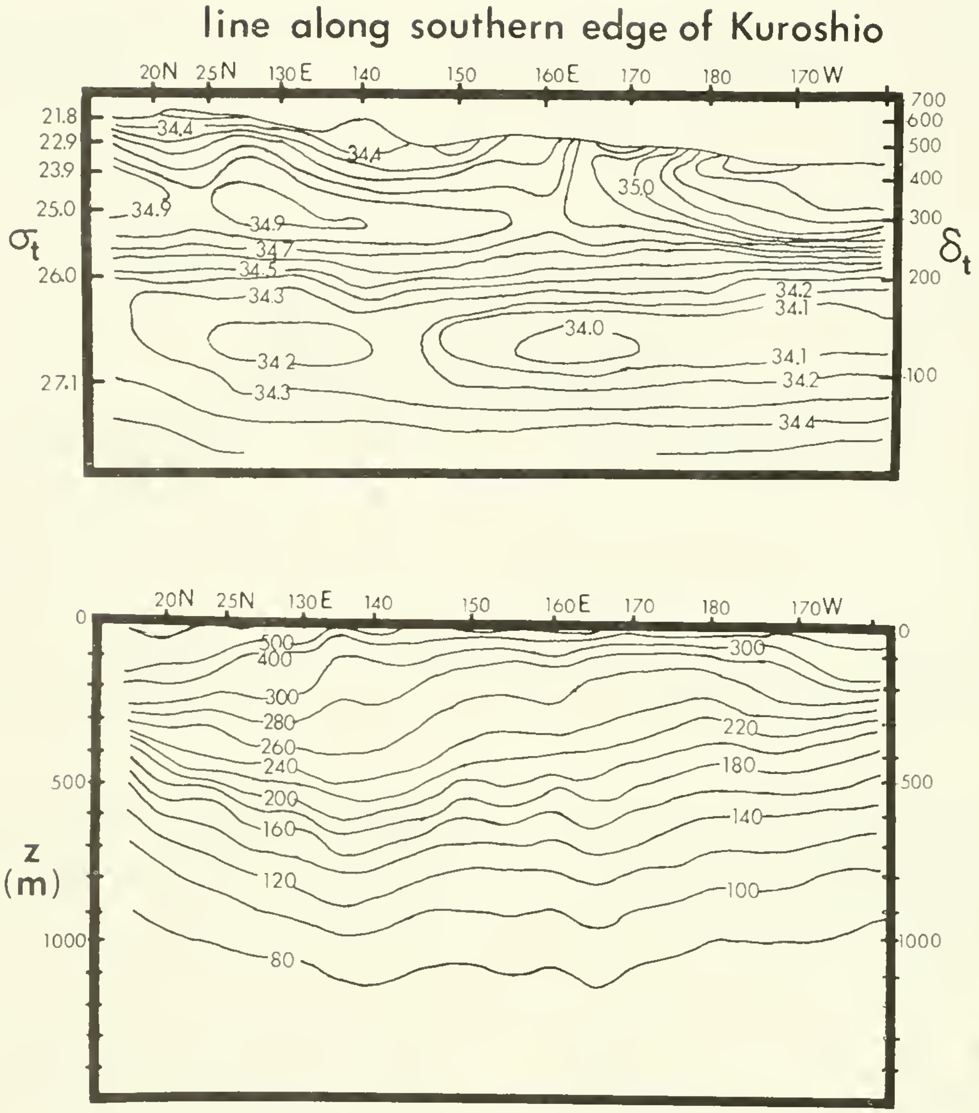


Figure 12.—Section of salinity (‰) versus thermosteric anomaly (cl t^{-1}) along right-hand edge of Kuroshio (upper panel). Section of thermosteric anomaly versus depth (m) along right-hand edge of Kuroshio (lower panel). (From Masuzawa 1972.)

September 1969 to June 1970. In March 1970 the sea-surface temperature was 2.5°C below the 6 yr average. Above-average temperatures occurred in the winters of 1966 and 1969.

The time variability in the vertical structure at OWS-V as reflected by the smoothed isopleths of salinity and depth versus σ_t is shown in Figure 14. Harmonic functions were evaluated at the first of each month using 12 harmonics for 1968-71 and only the first 3 harmonics for 1966 and 1967. The isopleths of salinity and depth are not shown for the time from 1 November 1967 to 1 March 1968 due to the large data gap during this time. However, the expected surface salinity and density for day 331 of 1967 and days 1 and 31 of 1968 are plotted and were derived from the harmonic coefficients for the surface temperature and salinity at OWS-V (Yong 1971).

The common feature for all years in the isentropic salinity distribution is the constancy of salinity versus σ_t at depths below the σ_t 26 level reflecting a constancy of T-S relationships. Note the constancy of the salinity minimum layer at σ_t 26.8, a feature that was also apparent in both the meridional and zonal sections shown in Figures 11 and 12.

Time variability in the salinity becomes pronounced above the σ_t 26 level and is associated, in part, with the seasonal change in the surface density. Maximum density at the surface occurs in March or April and minimum density in August or September. In 1970, for example, the maximum surface density was only a little less than σ_t 26. During the summer when the surface salinity is lower than in winter, a subsurface salinity maximum forms. In winter the highest salinity of 34.6 or 34.7‰ occurs at the surface. The structure of the subsurface salinity maximum is variable and may appear as

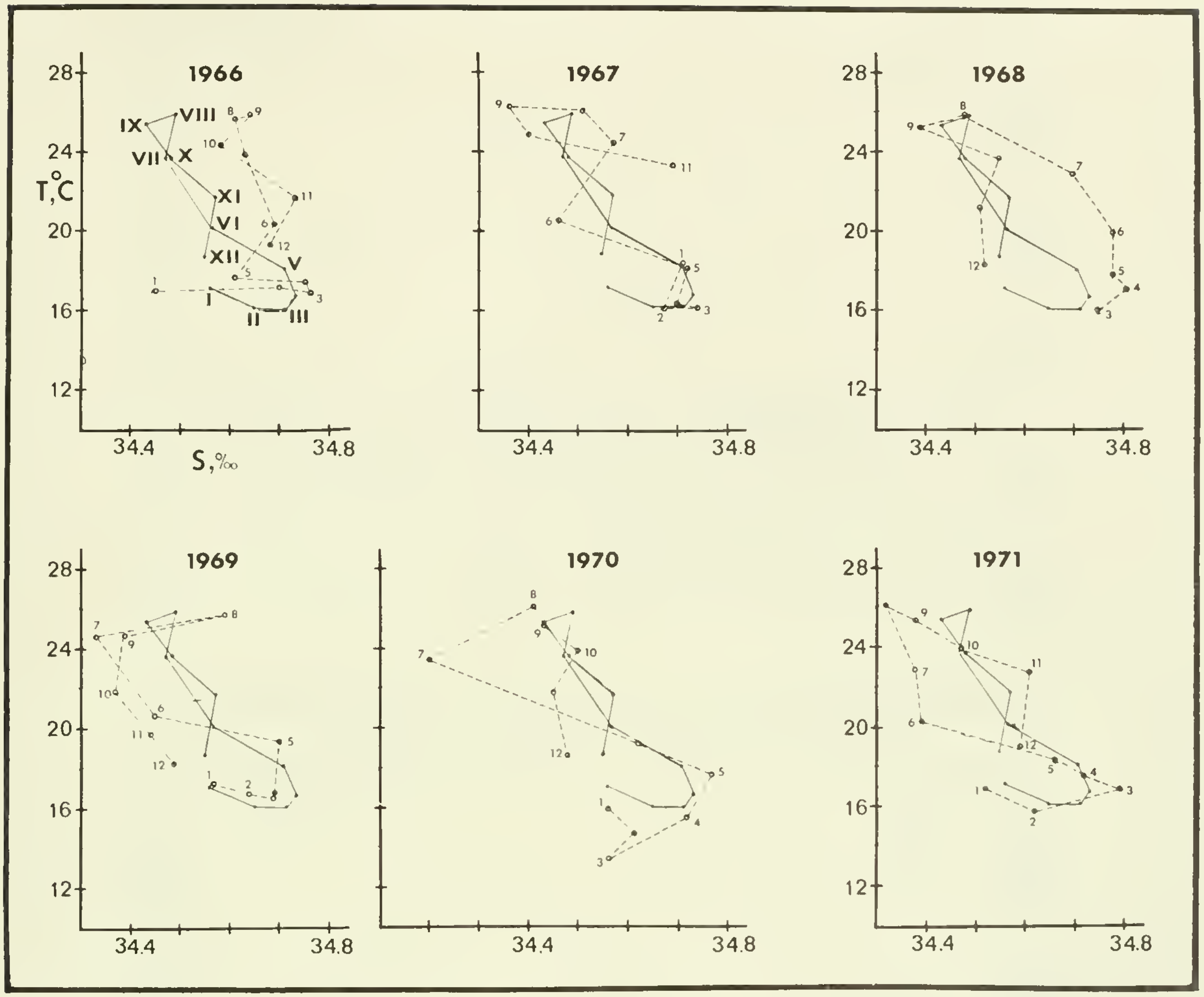


Figure 13.—Monthly mean surface temperature-salinity relationships at Ocean Weather Station V, 1966-71, connected by dashed lines. Arabic numerals represent months. Solid line connects 6-yr mean values. Roman numerals on the 1966 plot give months for the mean values.

well-developed cells as in June to August 1968, August 1969, and November 1971.

The baroclinicity of the area is reflected by the depth of σ_t levels. Time variability penetrates to the σ_t level. The depth of σ_t 26, the level below the seasonal temperature and salinity variability, ranges from about 200 to 400 m. These depth changes are not seasonal but show longer term variations. For example, during much of 1966 σ_t 26 was deeper than 300 m; during 1970 it remained near 200 m. Superimposed on these variations are perturbations of several months duration as in July to September 1969. Amplitudes of the harmonic series, $C_n = (A_n^2 + B_n^2)^{1/2}$, of the depth of the σ_t 26 level for the entire 6-yr record (Fig. 15) show that the greatest portion of the variance, $C_n > 30$ m; occurs on the interannual time scale. Beyond the 39th harmonic (56 day period) the absolute magnitudes of the amplitudes remain <10 m. Thus, changes in the depth of the pycnocline, as reflected by the σ_t 26 level, are climate-scale phenomena.

In terms of the oceanographic setting of OWS-V, the depth variations reflect north-south shifts of the Kuroshio Extension and/or passage of baroclinic eddies. The salinity variability above the σ_t 26 level permits qualitative interpretation of the observed depth changes. Whenever the depth of σ_t 26 increases to >300 m (see dashed lines in salinity sections, Fig. 14) there is a concurrent increase in the salinity of the shallow maximum, and during the winter, an increase in the surface salinity. Increases in depths began in February and June 1966, May 1968, April and July 1969, March and November 1971. A shallow salinity maximum is characteristic of Kuroshio water (Fig. 12). Thus, the coincident increases in salinity in the shallow maximum, or at the surface during the winter with increasing depths of σ_t 26 indicate a northward meander of the Kuroshio Extension.

In 1970, when σ_t 26 shoaled to <300 m, the salinity in the shallow maximum during spring, summer, and fall was relatively high in contrast to that in 1967 when the

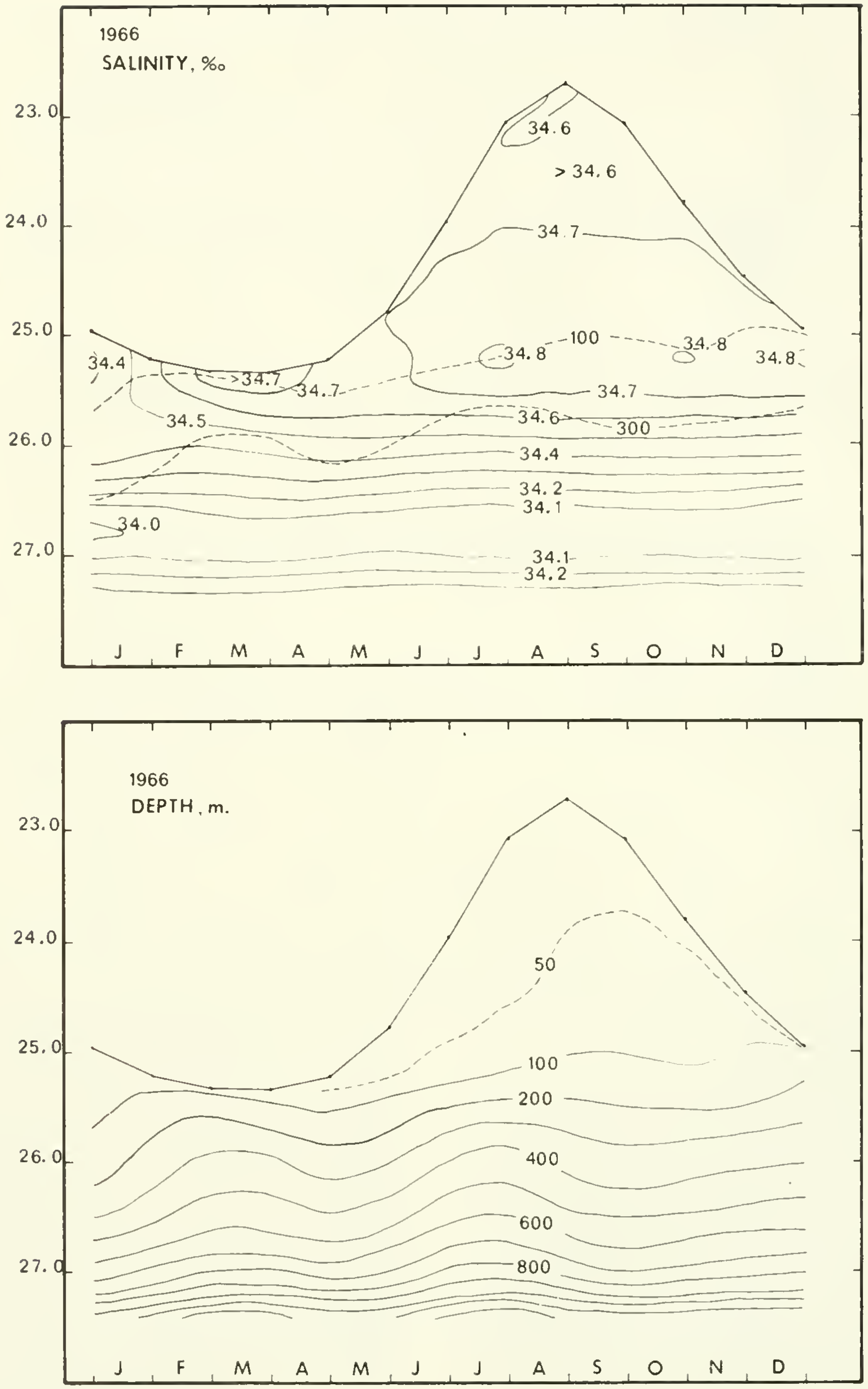
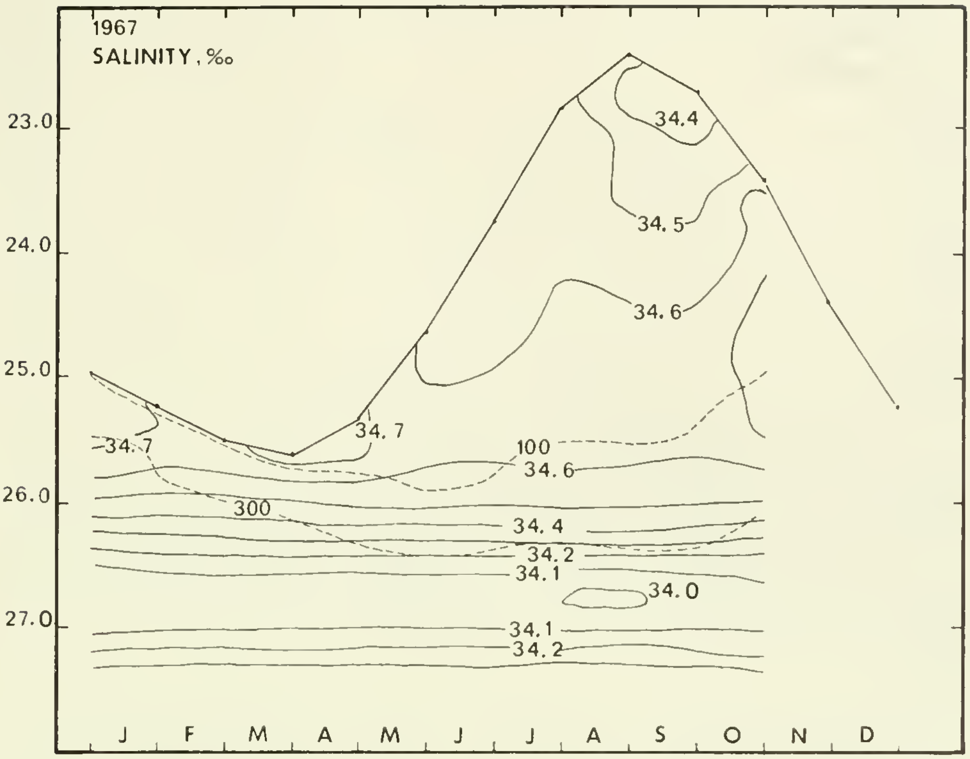
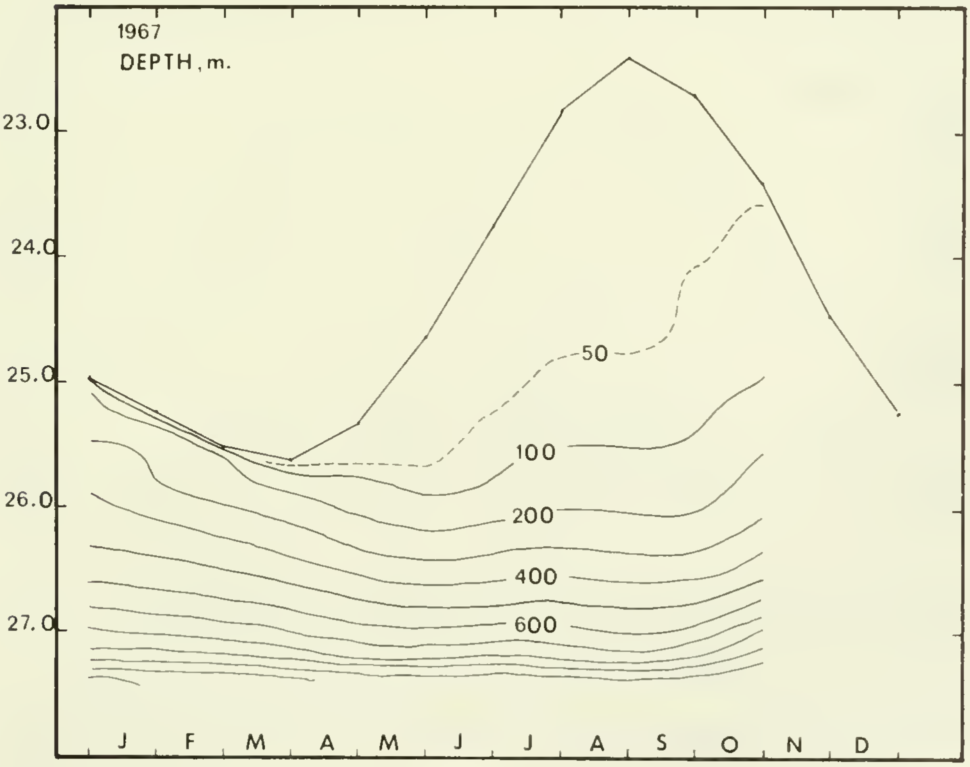


Figure 14.—Vertical profiles of salinity (upper panel) and depth (lower panel), with σ_t as ordinate, at Ocean Weather Station V, 1966-71. Values were calculated for first day of each month from the harmonic series carried out to the 3rd harmonic in 1966 and 1967 and to the 12th harmonic in 1968 through 1971. Uppermost solid line connects surface σ_t values. The contour intervals are 0.1‰ for salinity and 100 m for depth. Dashed curves on salinity plot represent 100 m and 300 m isopleths.





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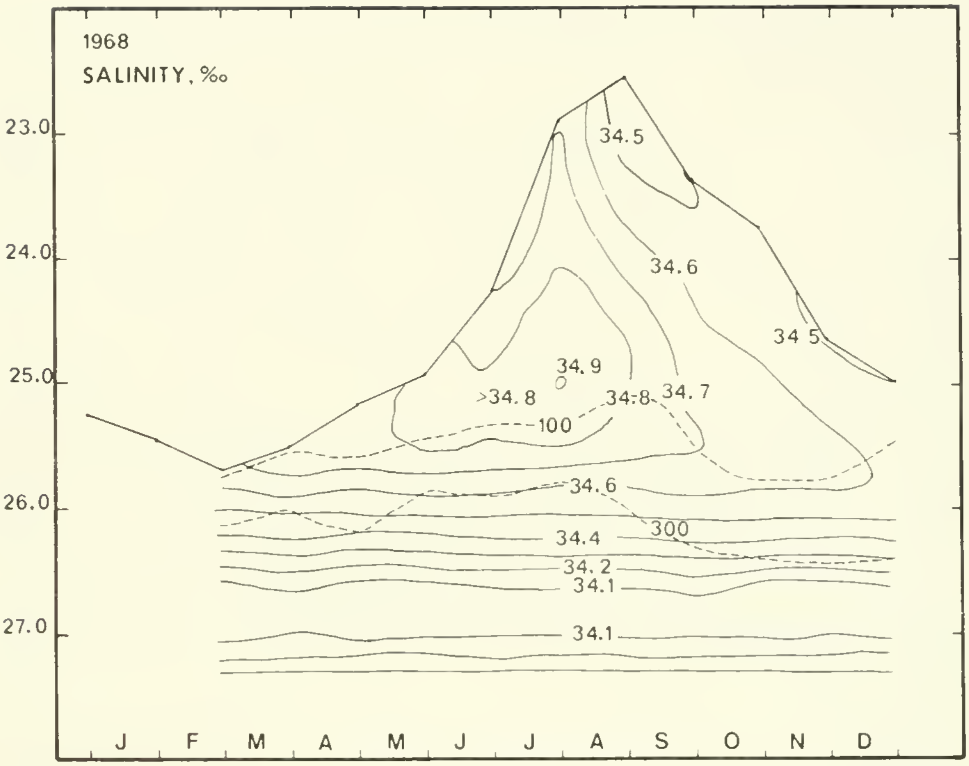

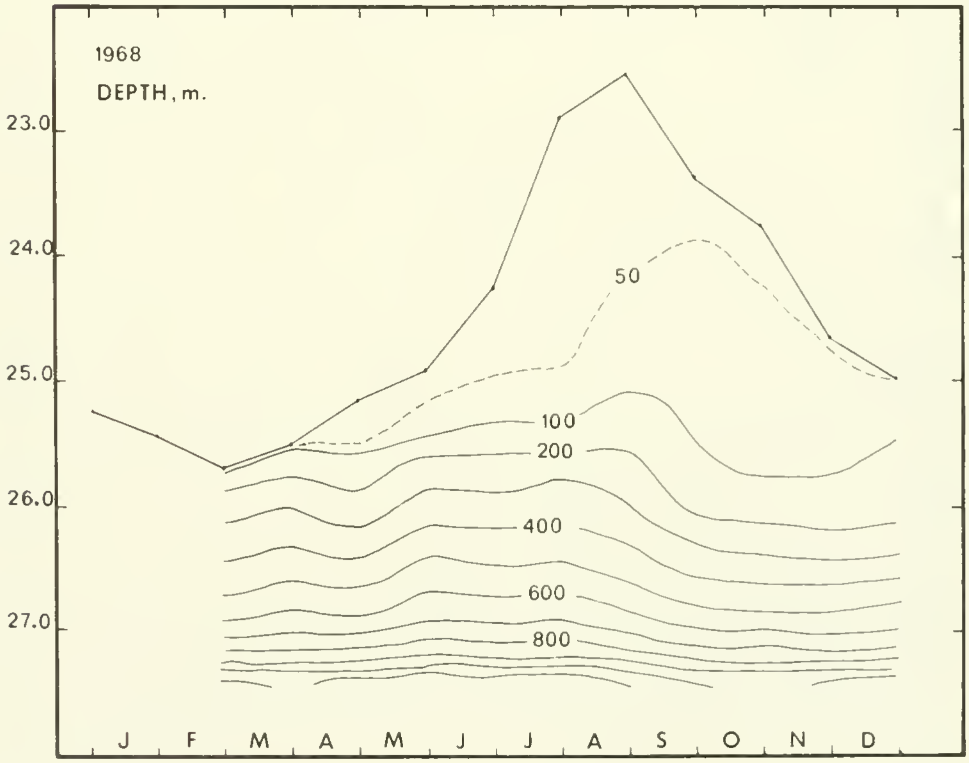

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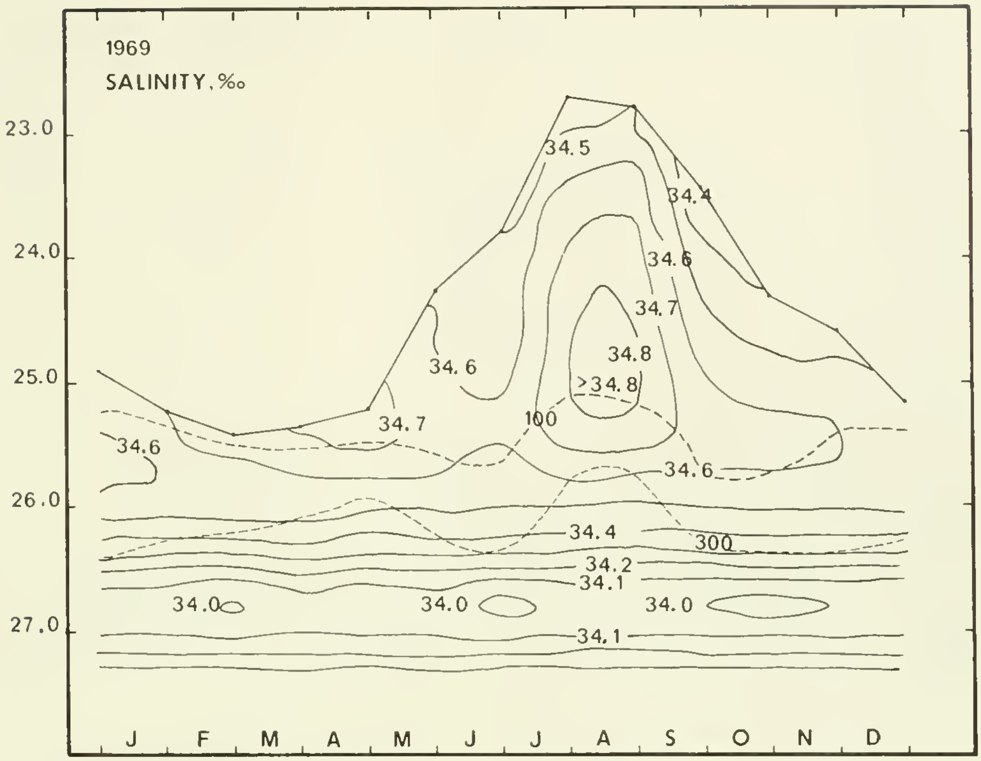

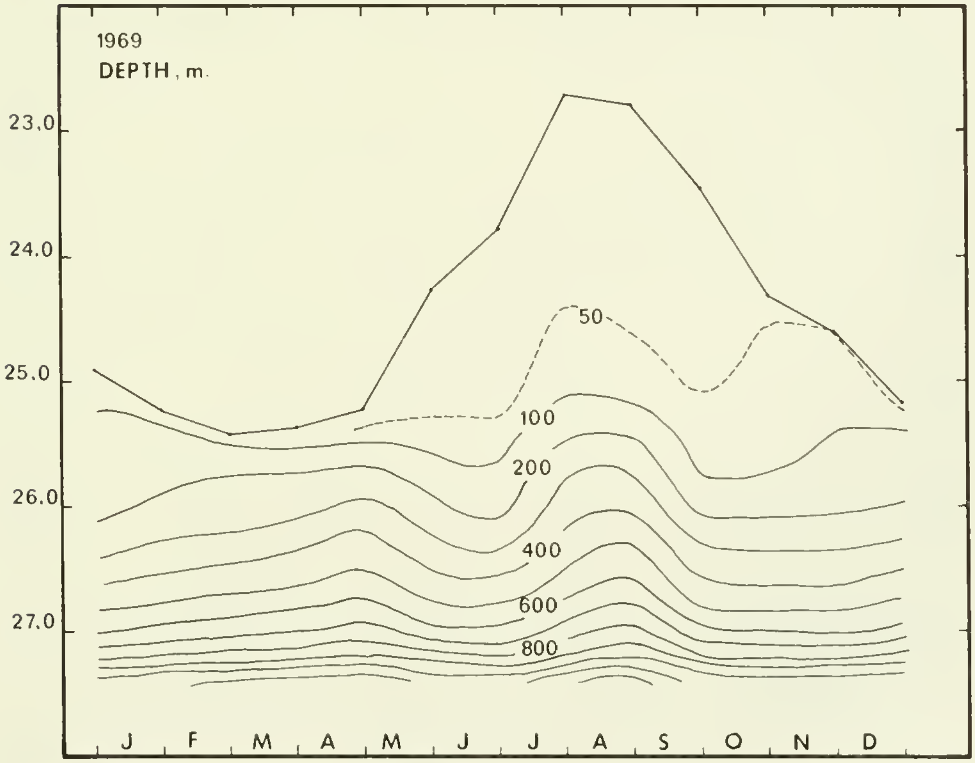

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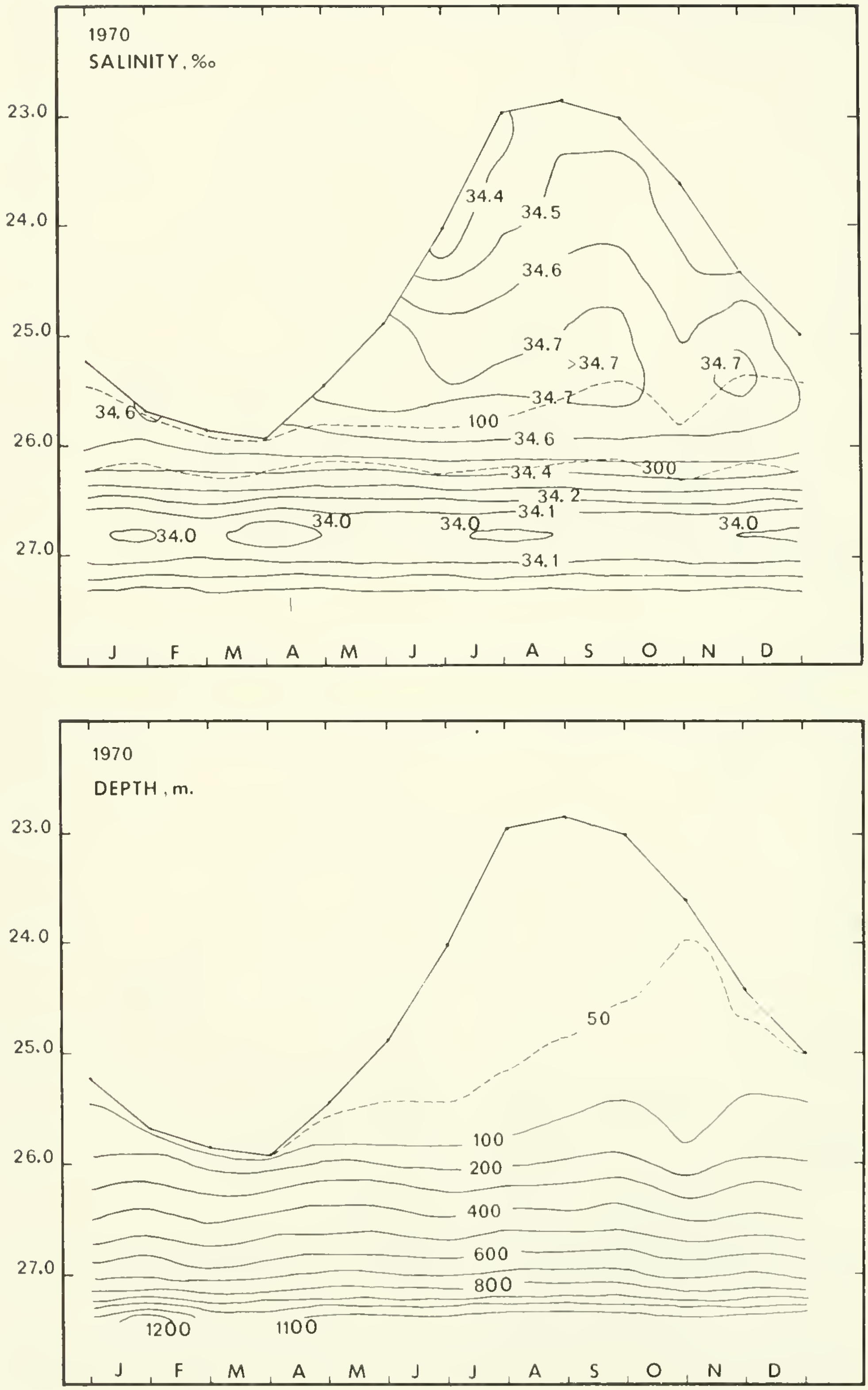

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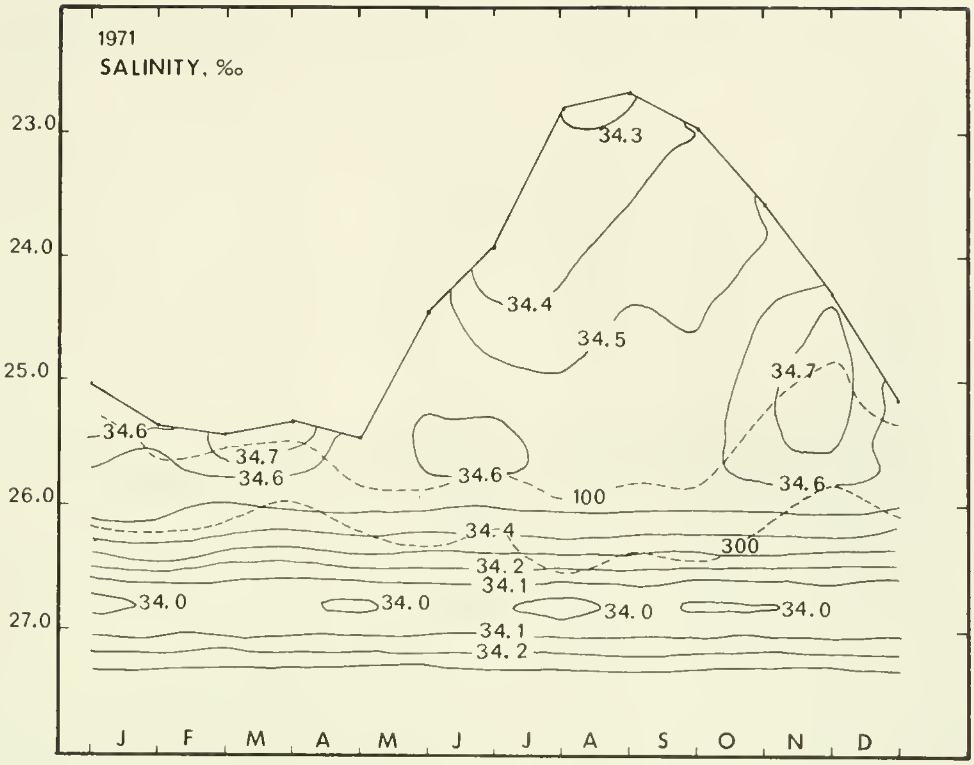

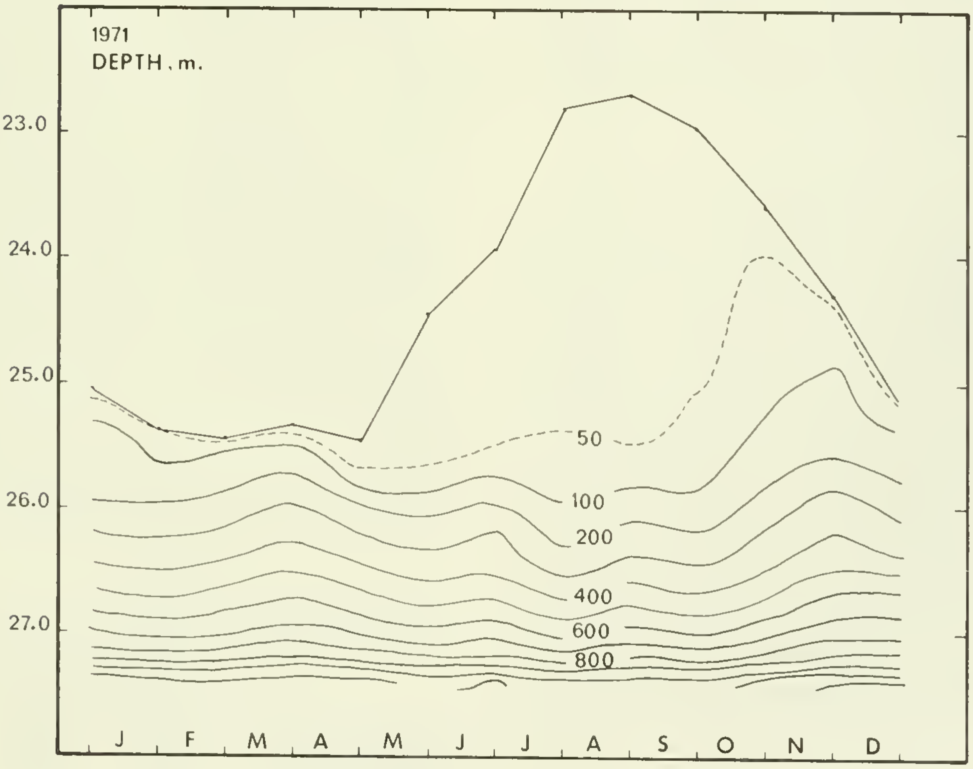

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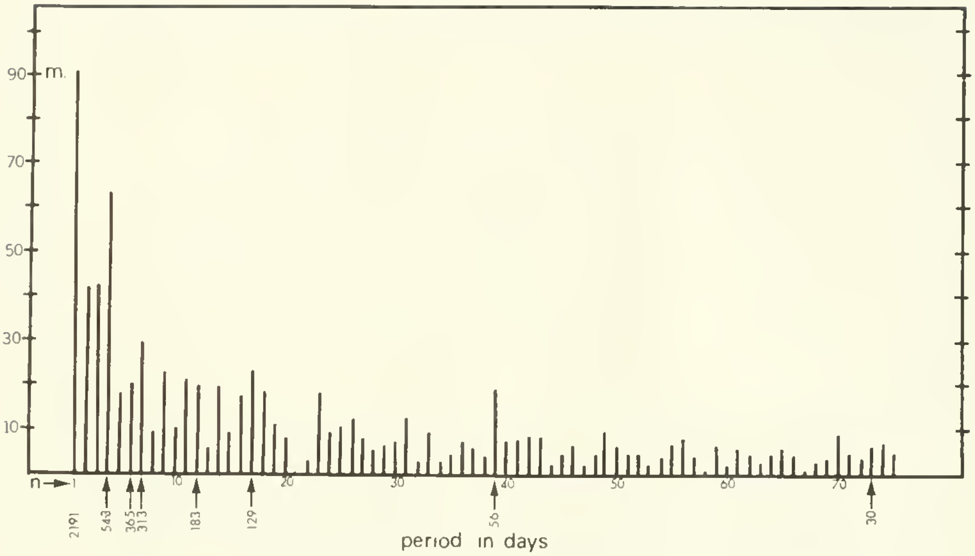

Figure 15.—Absolute magnitude of the amplitudes of the harmonic function for the 6-yr series of the depth of σ_t 26.0. Procedure was identical to that used in the annual analyses.

depth of σ_t 26 was also shallow. The high salinity indicates the presence of Kuroshio water at OWS-V although the shallow depth of σ_t 26 did not indicate a northward shift of the Kuroshio Extension. An explanation may be a weakened baroclinic flow during 1970 or a residual consequence of processes upstream of the station that also caused the lower surface temperatures at OWS-V during the first half of 1970.

The Water Structure and Air-Sea Interaction

A study of the effects of atmospheric forcing on ocean variability at OWS-V is not within the scope of this report. Nevertheless, some inferences can be made about the changes described above in the light of the air-sea interactions previously published (Husby and Seckel 1975). For example, principal heat loss from the sea surface occurs during the 6 mo from 1 October to 1 April, and one can inquire about the change in heat content of the water column between these dates.

Consider the layer above σ_t 26 in which temperature and salinity show seasonal changes. The heat content of this layer is $\rho c_p \bar{\theta} z$ where ρ is the density of the water, c_p is the specific heat at constant pressure, $\bar{\theta}$ is the mean temperature of the layer and z is the depth of the layer. With ρ and c_p assumed constant, the heat content of the layer changes because of changes in the thickness of the layer (divergence) and because of changes in the mean temperature.

$$\Delta H = \rho c_p \Delta(\bar{\theta} z) = \rho c_p [\bar{\theta} \Delta z + \bar{z} \Delta \bar{\theta}]. \qquad (7)$$

Changes in the last term are caused by the heat exchange across the sea surface, advection, and diffusion.

In Table 3, the heat content change, the heat content change due to the mean temperature change, and the total heat exchange across the sea surface are listed for the fall and winter cooling seasons from 1966 to 1971. Note the large interannual variability in the heat content changes with the layer actually gaining heat during the 1967-68 season when the total heat loss across the sea surface was anomalously high. Not only are these changes much larger than can be accounted for by the total heat exchange, they also bear no resemblance to the year to year changes of this atmospheric forcing process. The heat content change due to the change of mean temperature has the same order of magnitude as the total heat exchange but again, the interannual variability does not resemble that of the atmospheric forcing process. For example, the total heat exchange in the 1968-69 season was less than half that of the previous year, and yet the difference in the heat content change due to change in mean temperature was only 8 kcal cm^{-2}. Evidently other processes such as heat advection, play an important part in the change of mean temperature.

The 6-yr series of heat content of the layer to the σ_t 26 level (Fig. 16) shows that during 1966 the heat content was high, and during 1970 it was relatively low with irregular fluctuations between these years. A seasonal

Table 3.—Heat budget estimates at Ocean Water Station V for the 6-mos cooling portion of the year, 1 October to 1 April.

	A[1] (kcal cm^{-2})	B[2] (kcal cm^{-2})	C[3] (kcal cm^{-2})
1 Oct. 1966-1 Apr. 1967	−228.6	−93.0	−62.3
1 Oct. 1967-1 Apr. 1968	96.1	−76.4	−69.8
1 Oct. 1968-1 Apr. 1969	−137.1	−68.5	−33.1
1 Oct. 1969-1 Apr. 1970	−82.1	−51.7	−48.4
1 Oct. 1970-1 Apr. 1971	−139.6	−46.7	−53.6

[1] Heat content change in the layer from surface to σ_t26.

[2] Heat content change due to the change in mean temperature in layer from the surface to σ_t26 (see text).

[3] Total heat exchange across sea surface.

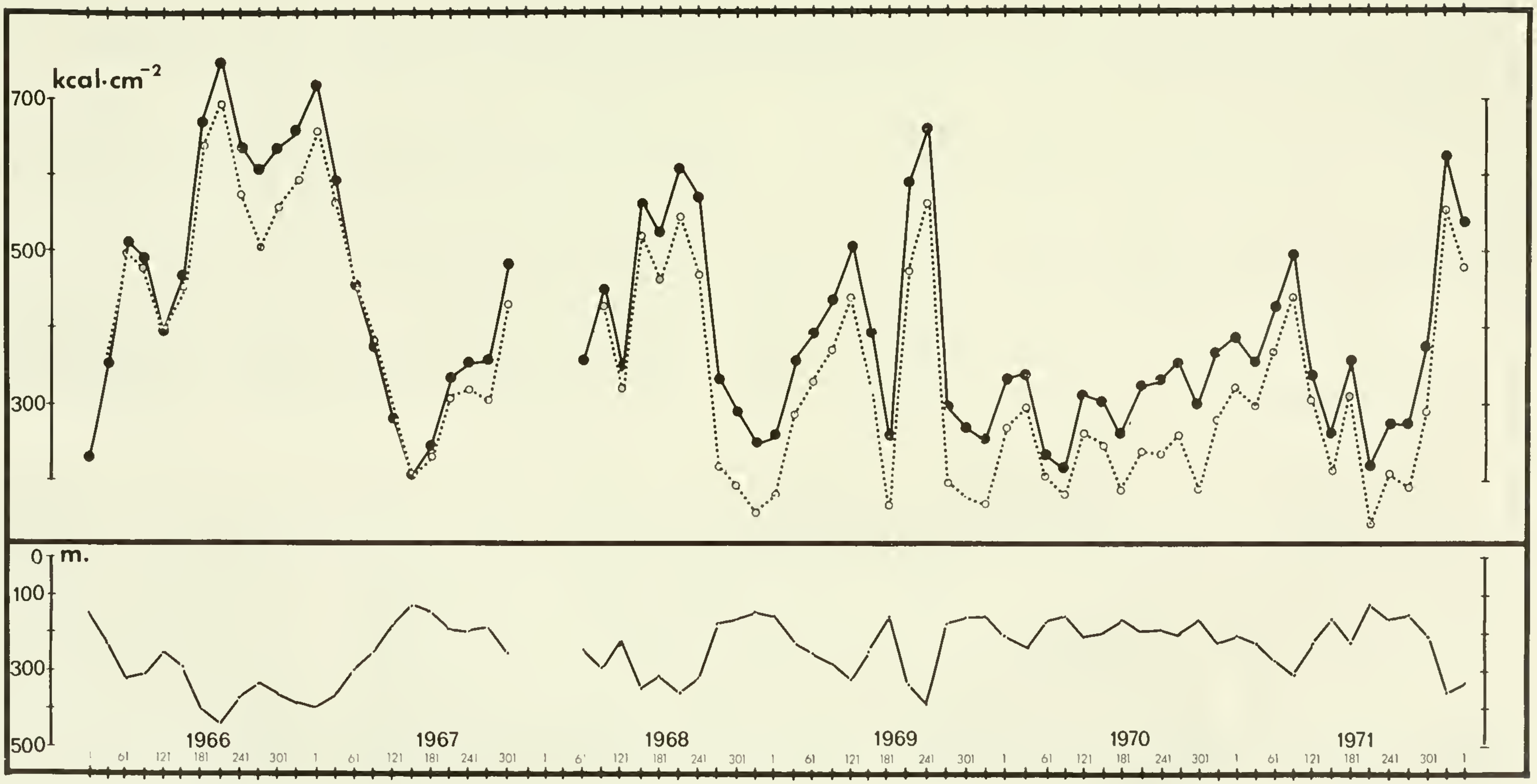

Figure 16.—Upper panel: Heat content (kcal cm^{-2}) of the water column from surface to σ_t 26.0 at Ocean Weather Station V at 30-day intervals (solid line), and the heat content (kcal cm^{-2}) based on the change in depth per month of the σ_t 26.0 level (dashed line) (see text). Lower panel: Depth (m) of the σ_t 26.0 level computed at midmonth from the harmonic series.

pattern is not discernible. The 6-yr series of the depth of σ_t 26 is shown in the lower panel indicating that the fluctuations in depth of the lower boundary of the layer are coherent with those in heat content: high heat content corresponds to greater thickness of the layer and lower heat content with reduced thickness. The coherence is clearly shown by the dashed line in Figure 16, representing the heat content variability due to changes in thickness ($\bar{\theta}\Delta z$) only. The values were obtained by sequentially adding the monthly changes ($\bar{\theta}\Delta z$) to the initial heat content on day 1, 1966. (The series was reinitialized on day 61, 1968.)

The seasonal aspects of the change of heat content per month due to change in the mean temperature in the layer above σ_t 26.0 ($\bar{z}\Delta\theta$), and the monthly heat exchange across the sea surface are shown in Figure 17. The two quantities plotted are of equivalent magnitude although the month to month variability of the change of heat content is greater than that of the heat exchange. If one assumes that the magnitude of the heat exchange is correct, then a greater decline in heat content than expected from heat exchange tends to occur during fall and winter. Heat content increases, greater than those expected from heat exchange, tend to occur during spring and summer. According to our estimates the heat exchange across the sea surface contributes only 47% to the variance in the rate of change of heat content due to mean temperature change. The remainder must be attributed to advection and diffusion of which the former is probably the dominant process.

Another opportunity to examine the effect of total heat exchange across the sea surface occurred during the time from the fall of 1969 to the spring of 1970 when both the surface temperature and the mean temperature in the layer above σ_t 26 were below the 6-yr average. Cooling began in August, 2 mo earlier than average, and continued until March 1970 (Fig. 18). A greater than average increase in temperature occurred in April 1970 (1.1°C instead of 0.1°C). Throughout this time there is no indication of anomalous heat exchange across the sea surface (Fig. 17). It is interesting to note that in April 1970 there was an increase in the surface salinity that subsequently persisted as a shallow subsurface salinity maximum (Fig. 14). There was no significant change in depth of the thermal structure (σ_t 26) during this month of relatively large surface temperature and salinity changes.

In summary, anomalous heat content changes in the 6-yr series cannot be attributed exclusively to anomalous heat exchange across the sea surface. Possibly, effects of processes >1,000 km upstream in the principal heat loss area of the North Pacific Ocean play an important role in the temperature variability. Unfortunately, heat advection cannot be calculated from the properties that were measured at OWS-V.

The salinity and salt content are important properties in isentropic analysis. Salt budget analyses, however, suffer from the lack of reliable precipitation data. The association of a shallow salinity maximum with the depth of σ_t 26 has already been described. In addition, there appears to be a seasonal trend in the 6-yr average of the surface salinity with the maximum occurring in late winter and spring and the minimum in late summer and early fall. Departures during individual years are large so that the average of only 6 yr may depart significantly from a long-term mean.

Reed and Elliott (1973) have estimated the precipitation at OWS-V from the present weather code in the standard marine weather reports. Although absolute magnitudes of these estimates may be in doubt, the seasonal trend is probably correct. The mean monthly values are listed in Table 4 together with the estimates of mean evaporation at OWS-V (Husby and Seckel 1975). The evaporation minus precipitation values indicate excess evaporation over precipitation during most of the year with lowest values occurring from April to August when the average salinities are also declining at OWS-V.

As in the case of the surface temperature the effect of advection on the surface salinity may be pronounced.

Table 4.—Estimates of mean evaporation rates (E)[1], mean precipitation rates (P)[2], and evaporation minus precipitation (E-P), (in millimeters per month) at Ocean Weather Station V.

	J	F	M	A	M	J	J	A	S	O	N	D
E	207	204	152	90	59	51	42	78	128	150	201	213
P	70	62	68	68	59	63	39	30	21	32	64	70
E-P	137	142	84	22	0	−12	3	48	107	118	137	143

[1] Husby and Seckel (1975).

[2] Reed and Elliot (1973).

SUMMARY AND CONCLUSIONS

In this report the oceanographic station data obtained at OWS-V from 1966 to 1971 have been presented in a form that lends itself to an examination of the effects of atmospheric forcing on the water structure. The report complements a previous report on large-scale air-sea interactions at OWS-V (Husby and Seckel 1975). The data processing and analysis procedures have been described. In order to facilitate future analysis of ocean structure, the principal features in the ocean variability have been described and heat budget estimates have been made that point to the important processes affecting the temperature in the upper layer at OWS-V.

Rather than presenting the temperature, salinity, and σ_t as a function of depth, the temperature, salinity, and depth were presented as a function of σ_t which we call the isentropic format. Harmonic analysis was used as a curve-fitting procedure to summarize the isentropic data with a relatively small number of coefficients and to provide smoothed estimates of daily observations. Large gaps in the sampling record in 1966 and 1967 limit the usefulness of the harmonic coefficients during these time periods. Results of the harmonic analyses are presented in the appendix showing the harmonic coefficients for the temperature, salinity, and depth at intervals of 0.2 σ_t

Presentation of the oceanographic station data in isentropic format shows that the apparently complex

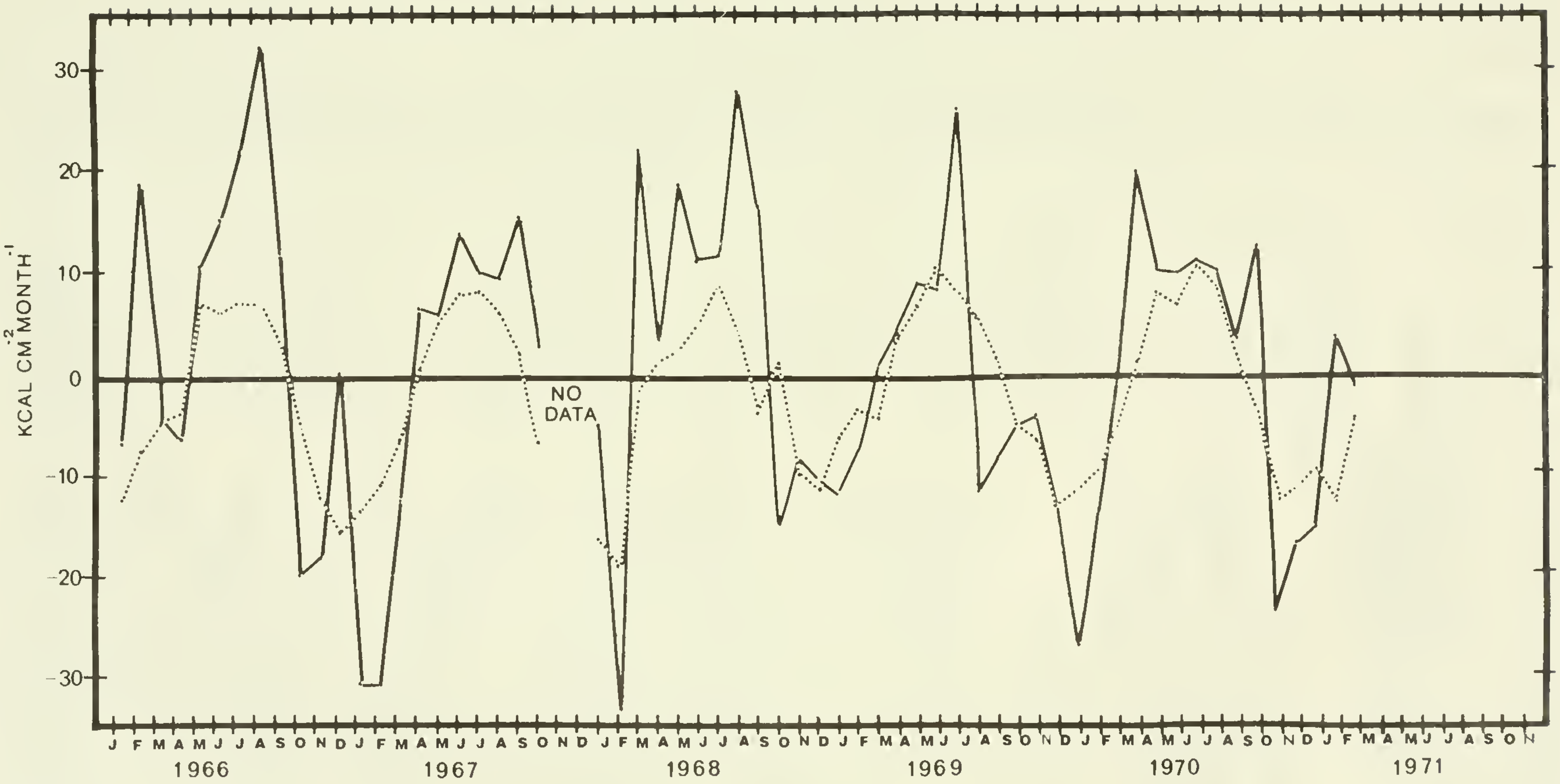

Figure 17.—Heat content change per month (30-day) based on change in mean temperature per month in layer from sea surface to σ_t computed from the harmonic series (see text) (solid line) and heat content change per month contributed by net heat exchange across sea surface (dashed line).

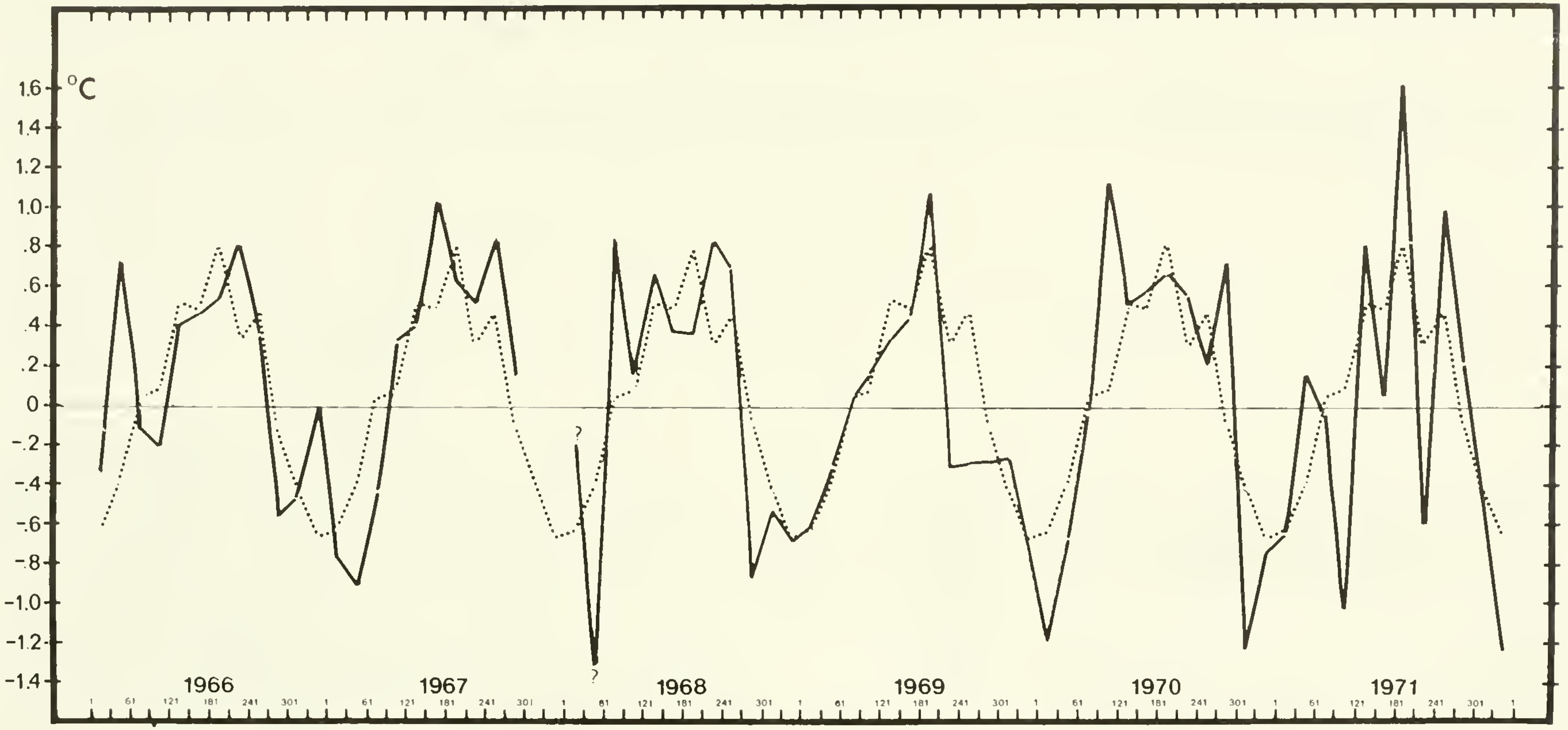

Figure 18.—Change per month (30-day) of the mean temperature from sea surface to σ_t 26.0 at Ocean Weather Station V, computed from the harmonic series (solid line). The 6-yr mean values are indicated by the dotted line.

distribution of properties at OWS-V have some order and permit identification and isolation of different processes that contribute to changes in the distributions. This point is illustrated by the time-series sections of salinity versus σ_t (Fig. 14). At depths greater than σ_t 26 the T-S relationships remain relatively constant with the salinity minimum occurring at a constant σ_t level, σ_t 26.8.

Variations in the depth of sigma-*t* below σ_t 26 (Fig. 14) reflect changes in the baroclinicity of the area. Deepening of the pycnocline as indicated by the depth of σ_t 26 is associated with an increase in the surface salinity during winter or the appearance of a shallow subsurface salinity maximum at other times of the year. A shallow subsurface salinity maximum is characteristic of the Kuroshio Current. Meridional sections near OWS-V show the pycnocline depth to increase southward. Thus, the associated changes in the salinity of the upper layers above σ_t 26 indicate meandering of the Kuroshio Extension.

The net heat loss across the sea surface at OWS-V during the fall and winter 1967-68 was anomalously high and during 1968-69 anomalously low. These anomalies were not reflected in changes of the heat content in the layer above σ_t 26. In fact, changes in the thickness of the layer are the dominant influence in changes of heat content, obscuring effects of the seasonal variation of the heat exchange across the sea surface. The variation of the heat content of the layer due to a change in the mean temperature (Fig. 17) does reflect the seasonal variation of heat exchange across the sea surface. Again, however, the anomalous heat loss during 1967-68 and 1968-69 are not reflected in anomalous declines of the mean temperature of the upper layer. Anomalously low temperatures beginning in the summer of 1969 and lasting to the spring of 1970 were not caused by anomalous heat exchange. Thus, horizontal advection and possibly, to a lesser extent, diffusion play a dominant role in the temperature variability at OWS-V.

It is interesting to note that the surface divergence as reflected by changes in the depth of σ_t 26 has no annual periodicity. The 6-yr record shows that large baroclinic variability occurs at time scales of more than 55 days with largest variability occurring at the interannual scale.

OWS-V is located in a dynamically active ocean area with the area of highest net annual heat loss in the North Pacific lying over 1,000 km upstream. Relatively large meridional temperature gradients vary seasonally and probably also from month to month. Velocity variations of the Kuroshio Extension at the time scales considered here must also be expected. Consequently, divergence and horizontal advection play an important role in the variability of the observed properties, obscuring the effects of local atmospheric forcing.

The preliminary analyses reported here show that important properties of the ocean structure can be obtained from a monitoring station such as OWS-V. It may be more difficult, however, to relate changes in the structure with local atmospheric forcing. In this case the effects of heat exchange across the sea surface are obscured by other processes. Some of these processes could possibly be determined by measurements that have not been made on weather ships. Obviously, anomalous atmospheric forcing must produce anomalous ocean conditions. It appears that these relationships can be established best if fields of properties in ocean and atmosphere are monitored in order that the effect of divergence and advection can be determined, or that area integrals can be obtained.

ACKNOWLEDGMENTS

We thank A. Bakun, Pacific Environmental Group, NMFS; R. L. Elsberry, Naval Postgraduate School; and S. Tabata, Institute of Ocean Sciences, Sidney, B.C., for reviewing the manuscript and making many useful comments.

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APPENDIX I

Tables of coefficients for the calculation of temperatures, °C, salinities, ‰, and depths, m, at sigma-t levels at Ocean Weather Station V, 1966-71, using the series

$$E(t) = f(1) + M \cdot (t-1) + A_0 + \sum_n [A_n \cos \frac{n\omega t}{T} + B_n \sin \frac{n\omega t}{T}]$$

$n = 1, 2, \ldots, 12$

where $f(1)$ = value of property at first day of year,
M = slope of straight line between $f(1)$ and $f(366)$,
$\omega = \frac{2\pi}{366}$ day^{-1}, except for 1968 where $\omega = \frac{2\pi}{367}$ day^{-1},
t = Julian day of the year

Upper row of Fourier coefficients at each level contains A-coefficients beginning with A_1. Lower row contains B-coefficients beginning with B_1.

```
                                     OWS-V ISENTROPIC SUMMARY,1966
                                        PROPERTY = TEMP.(C)
                                     FUNDAMENTAL PERIOD = 366 DAYS
LEVEL     F(1)       M FIRST  LAST    A(0)                              FOURIER COEFFICIENTS X 100
                      OBS.   OBS.
SURF.    18.01   .0025    4   361    2.17-196.75   -59.28   -17.68    20.17     5.75     4.82     7.75    12.54     4.24     6.88     1.16     4.47
                                         -397.34    88.69   -15.99     3.76    -5.04   -11.26   -12.71    16.07   -15.31    11.06    -4.07     4.75
22.80    25.84  -.0010  229   280     .09 -11.33      .26     2.90      .37    -1.33     -.74      .88      .74     -.58     -.65      .30      .63
                                             .46     5.06      .05    -1.86     -.62     1.04      .77     -.74     -.69      .43      .63     -.20
23.00    24.89   .0003  218   286     .03   -.92    -6.86     6.32     -.21    -2.01     -.05      .20     1.94    -1.83     -.47     1.12     -.11
                                          -10.63     5.64     2.64    -4.52      .91      .37     1.37    -1.03    -1.46     1.87     -.20     -.18
23.20    24.41  -.0004  216   286     .08  -7.05    -5.16     5.20     1.01    -1.37    -1.43      .31     2.15    -1.49     -.24      .39     -.23
                                           -7.49     6.22     2.63    -3.31     -.76      .27     2.15     -.98    -1.34     1.26     -.41      .54
23.40    23.97  -.0007  188   287     .07  -8.01     -.78     1.87     1.71    -1.48    -1.50     1.38      .88     -.85     -.74      .73      .12
                                            -.68     3.49     1.20    -1.37    -1.85     1.60     1.05    -1.01     -.90      .88      .35     -.21
23.60    23.32  -.0007  188   288     .06  -7.18    -1.23     1.96     1.42     -.78    -2.04     1.42      .92     -.78     -.52      .15      .53
                                            -.62     3.06     1.44    -1.27    -1.70      .91     1.76    -1.44     -.39      .19      .71     -.15
23.80    22.76  -.0009  186   288     .06  -7.21    -1.09     1.79     1.32     -.53    -2.03     1.32      .72     -.58     -.31     -.14      .65
                                            1.96     1.74     2.13    -1.67    -1.15      .28     2.07    -1.69      .22     -.43     1.00     -.41
24.00    21.97  -.0005  181   288     .06  -6.73     -.24      .78     1.58     -.39    -1.97     1.13      .82     -.78      .19     -.74     1.08
                                           -1.87     3.33      .30      .12    -2.25      .93     1.47    -1.22      .01     -.24      .58      .15
24.20    21.12   .0008  179   327    -.03    .80     3.65     -.74      .46    -1.27    -1.13     1.87     1.32    -2.10      .06    -1.46     1.95
                                           -3.51     3.33    -4.12     1.73    -2.55     2.78      .51    -1.69     -.96      .69      .63     1.49
24.40    20.66   .0000  176   327    -.01   -.33     1.84     -.39      .55     -.63    -1.23     1.63     1.08    -2.03      .38    -1.22     1.62
                                            1.76      .20     -.88      .23    -1.26     1.27     1.21    -2.09     -.30      .60      .30     1.45
24.60    19.86   .0001  170   335     .04  -3.18      .93    -1.84     1.15    -2.02     -.10     1.01     1.84    -2.57     1.40     -.83     1.59
                                           -4.43     1.06     -.60     -.04     -.11      .94     2.25    -3.05     1.02     -.12      .68     -.16
24.80    18.20   .0020    7   361     .43 -26.03    -3.87    -3.57    -2.93    -2.37    -3.36     1.16    -1.08    -2.06      .18      .46      .71
                                           -4.19    -5.45     -.13    -2.44      .30      .50     2.35    -2.41     1.78     1.08      .57     -.02
25.00    17.20   .0028    4   361     .46 -19.05     5.07    -9.37      .91    -4.00    -2.97      .09    -2.82    -2.57    -1.37      .01    -1.11
                                           -8.51     6.40     1.77      .69     2.76      .61     2.97    -1.53     2.39     1.59      .93      .37
25.20    16.28   .0039    4   361     .50 -10.06    -6.69   -20.52     2.07    -2.50    -2.31     1.55      .40     -.77      .00     -.93     -.26
                                           24.37    23.70    -1.86    -2.36     1.54     -.36      .19    -2.56     2.90     3.54     1.64     -.20
25.40    15.49   .0034    4   361     .48 -14.87   -12.27   -15.16     5.38     -.71     1.02     4.74    -1.15     1.38     2.41     -.87     -.90
                                           25.03    12.52    -9.51    -4.47      .46    -1.92     3.41     -.55     2.32     6.34     4.50     1.93
25.60    14.98   .0020    4   361     .17 -13.81    -9.94    -1.29     3.76    -3.73     3.16     6.31     3.49     1.14     2.14    -1.20     -.62
                                           11.66    -1.60    -5.54     -.83     3.37    -6.96     1.57      .67     2.45     6.56     3.07     2.32
25.80    14.25   .0007    4   361    -.11  -7.39    -4.47     3.39     2.18    -2.64     5.78     3.37     -.61     4.00     1.80    -1.55    -1.76
                                           -1.42    -2.83    -3.47      .84    -1.68    -3.66     4.58     -.03      .23     5.58     2.74    -1.20
26.00    13.13  -.0002    4   361    -.14   -.50    -1.95     4.73    -1.19    -1.65     3.38     1.01    -1.55     1.96     2.19    -3.73    -2.61
                                          -10.45    -5.99     1.82     -.58    -1.49    -2.18     2.71    -1.09    -2.08     4.35     1.35    -4.54
26.20    11.72  -.0012    4   361    -.05   3.23    -4.17     3.14     2.09     4.06     3.32     1.56    -4.63     1.60     1.27    -4.95    -1.49
                                          -13.51   -10.26     1.37    -2.61    -1.07     1.52     3.74    -2.54    -2.71     4.10     1.09    -4.35
26.40    10.00  -.0015    4   361     .05   2.47   -10.52     1.52     1.29     6.42     6.68     -.79    -6.13      .59     1.31    -3.21     -.06
                                          -12.59   -10.71    -4.95    -2.60    -7.26     3.31     4.25    -5.24    -1.00     3.69     1.98    -3.94
26.60     7.68  -.0001    4   361     .16  -3.46   -13.74    -3.76     1.33     6.64     3.62     -.99    -5.42    -1.29      .97    -2.99    -1.14
                                            3.85    -7.09    -2.81    -2.86    -4.71     1.00     1.14    -6.53     -.20     2.06     3.49    -1.99
26.80     5.90   .0004    4   361     .09  -5.95    -5.24    -2.48    -1.93     5.23     -.26     -.20    -2.80     1.39     2.23    -5.63    -1.47
                                            8.62    -5.29    -3.42     -.51    -3.42    -3.02      .63     -.77     -.41     3.36     3.50     -.84
27.00     4.83  -.0001    4   361     .01  -5.23     1.32     -.64     -.26     4.98    -6.21     2.20    -1.25     4.90     -.59    -2.96    -1.05
                                             .41    -5.83     5.87    -5.84     2.96    -2.31     -.75    -1.98     -.21     3.60     -.85     -.94
27.20     3.90  0.0000    4   361     .00  -4.70     4.27     3.36      .39     -.11    -5.95     -.93     1.89     3.86    -2.34    -2.99     -.48
                                           -5.61    -7.23     4.77    -2.53     1.90    -1.89    -3.35    -3.01     2.59     3.91      .25     -.74
27.40     3.13  0.0000    4   361    -.07  -3.95     9.98     4.84     1.08    -1.54    -4.74    -2.65     2.76     2.83     -.24    -4.08    -2.03
                                          -10.48   -10.39    -1.38     3.84     2.73    -2.67    -5.53    -1.06     3.32     3.93     1.42    -1.78
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                                              OWS-V ISENTROPIC SUMMARY.1966
                                                PROPERTY =SALINITY
                                              FUNDAMENTAL PERIOD = 366 DAYS
LEVEL   F(1)     M    FIRST LAST   A(0)                          FOURIER COEFFICIENTS X 100
                       OBS.  OBS.
SURF.   34.42   .0008    4   361    .09   -1.63  -3.95  -3.03  -1.24  -4.05  -1.17   1.57    .49   -.03    .14    .52    .30
                                          13.85   1.77  -2.76  -3.62   1.04    .42   1.41  -1.48  -1.07   1.17   1.90    .61
22.80   34.60  -.0004  229   280    .04   -4.54    .20   1.07    .14   -.47   -.32    .35    .30   -.24   -.24    .10    .24
                                            .32   1.96   -.03   -.67   -.27    .39    .33   -.30   -.26    .16    .23   -.05
23.00   34.48   .0001  218   286    .01    -.31  -2.71   2.49   -.10   -.77   -.05    .11    .78   -.78   -.14    .44   -.06
                                          -4.23   2.23   1.03  -1.77    .35    .14    .58   -.46   -.55    .77   -.12   -.05
23.20   34.56  -.0002  216   286    .03   -3.22  -2.18   2.18    .54   -.64   -.62    .16    .86   -.57   -.12    .16   -.09
                                          -3.08   2.65   1.19  -1.41   -.40    .19    .87   -.39   -.55    .49   -.15    .20
23.40   34.65  -.0003  188   287    .03   -3.47   -.49    .93    .73   -.67   -.59    .53    .36   -.29   -.34    .28    .06
                                           -.52   1.61    .58   -.68   -.74    .66    .42   -.36   -.39    .32    .18   -.10
23.60   34.67  -.0003  188   288    .03   -2.95   -.53    .76    .64   -.27   -.94    .65    .36   -.35   -.12   -.03    .26
                                           -.06   1.12    .70   -.52   -.74    .34    .82   -.70   -.04   -.01    .31   -.07
23.80   34.72  -.0004  186   289    .02   -2.65   -.33    .56    .56   -.16   -.89    .60    .30   -.32   -.04   -.13    .31
                                           1.06    .45    .86   -.59   -.50    .10    .92   -.81    .16   -.19    .39   -.12
24.00   34.68  -.0001  181   288    .02   -2.11    .11    .04    .60   -.08   -.80    .51    .29   -.37    .14   -.30    .43
                                           -.53   1.00   -.01    .24   -.92    .39    .57   -.55    .05   -.06    .17    .11
24.20   34.63   .0003  179   327   -.01    -.09    .88   -.16    .17   -.51   -.19    .63    .46   -.80   -.04   -.47    .71
                                          -2.10   1.49  -1.34    .60   -.81   1.04    .01   -.56   -.43    .34    .24    .53
24.40   34.71   .0001  176   327   -.00    -.09    .59   -.25    .21   -.31   -.22    .52    .43   -.84    .19   -.45    .61
                                           -.33    .37   -.50    .25   -.44    .56    .27   -.72   -.16    .30    .08    .50
24.60   34.71   .0001  170   335    .01    -.79    .26   -.70    .30   -.67    .13    .40    .66  -1.06    .45   -.33    .63
                                          -1.71    .27   -.22    .03    .14    .30    .71  -1.20    .32    .02    .30   -.00
24.80   34.43   .0006    7   361    .14   -8.64  -1.39  -1.15  -1.13   -.77  -1.01    .43   -.38   -.71   -.01    .15    .30
                                          -1.79  -2.20   -.16   -.98    .21    .10    .68   -.87    .53    .39    .26    .06
25.00   34.36   .0009    4   361    .15   -6.24   1.54  -3.01    .21  -1.33   -.92    .09   -.91   -.78   -.48    .09   -.36
                                          -2.37   2.14    .67    .27   1.02    .29   1.02   -.49    .80    .55    .34    .09
25.20   34.34   .0012    4   361    .16   -3.19  -2.10  -6.47    .69   -.70   -.77    .42    .11   -.18    .06   -.30   -.07
                                           7.82   7.26   -.65   -.79    .41   -.16    .15   -.79   1.03   1.18    .56   -.04
25.40   34.37   .0010    4   361    .14   -4.18  -3.45  -4.62   1.40   -.28    .21   1.40   -.46    .28    .67   -.29   -.11
                                           7.58   3.77  -2.48  -1.08    .23   -.62   1.06   -.19    .66   1.87   1.23    .57
25.60   34.49   .0006    4   361    .05   -3.82  -2.84   -.45   1.16  -1.07    .90   1.84    .89    .18    .59   -.37   -.18
                                           3.29   -.46  -1.77   -.22    .96  -2.05    .39    .19    .69   1.92    .85    .65
25.80   34.55   .0001    4   361   -.02   -2.03  -1.21    .63    .80   -.52   1.24   1.17   -.19   1.05    .41   -.42   -.49
                                          -1.05  -1.51  -1.02   -.06   -.32  -1.15    .93    .08    .11   1.57    .62   -.25
26.00   34.50  -.0001    4   361   -.04    -.54   -.62   1.27   -.41   -.13    .96    .31   -.32    .52    .51   -.89   -.63
                                          -2.27  -1.79    .28    .09   -.32   -.50    .76   -.23   -.35    .94    .23  -1.06
26.20   34.41  -.0002    4   361   -.03     .79   -.83    .84    .30   1.24    .80    .18   -.95    .30    .58  -1.00   -.29
                                          -1.84  -2.08    .54   -.55   -.20    .45    .91   -.61   -.43    .84    .20  -1.05
26.40   34.26  -.0002    4   361   -.01     .32  -2.23    .41    .54   1.62   1.12   -.05   -.89   -.09    .28   -.53    .13
                                           -.75  -1.68   -.47   -.25   -.81   1.12    .85   -.59    .07    .57    .40   -.75
26.60   34.05   .0000    4   361    .04    -.27  -2.51  -1.18   -.18    .85    .06   -.30   -.94   -.02    .46   -.20   -.30
                                           1.65   -.78   -.32   -.06   -.61   -.16   -.28  -1.43   -.04    .23    .88   -.06
26.80   34.00   .0001    4   361    .02   -1.16   -.59   -.64   -.45   1.09   -.07    .22   -.75    .58    .11   -.76   -.38
                                           1.73  -1.20   -.04   -.24   -.07   -.85    .11   -.18   -.04    .64    .40    .04
27.00   34.10  -.0000    4   361   -.01    -.76    .31   -.17    .07   1.17   -.77    .47   -.24    .67   -.15   -.56   -.02
                                            .22  -1.08    .78  -1.07    .62   -.24    .09   -.06    .04    .56   -.21   -.21
27.20   34.23  -.0002    4   361   -.00    -.36    .57    .40   -.06    .06   -.78   -.20    .30    .49   -.25   -.37   -.01
                                           -.79  -1.06    .53   -.38    .24   -.26   -.47   -.59    .26    .41    .02   -.10
27.40   34.38  -.0003    4   361   -.00    -.59   1.18    .44    .09   -.29   -.60   -.38    .22    .28    .03   -.49   -.20
                                          -1.65  -1.33   -.52    .46    .16   -.32   -.75   -.09    .40    .65    .37   -.19
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                                                   OWS-V ISENTROPIC SUMMARY,1966
                                                     PROPERTY = DEPTH(M.)
                                                   FUNDAMENTAL PERIOD = 366 DAYS
LEVEL    F(1)      M     FIRST LAST   A(0)                               FOURIER COEFFICIENTS
                         OBS.  OBS.
SURF.   24.83 -.0000   4   361    -.35     .40     .38    -.14    -.13    -.11    -.23     .12    -.18     .23    -.05     .14    -.01
DENSITY                                   1.18     .03    -.07     .26    -.18     .14    -.16    -.12     .01    -.10     .18    -.06
22.80    2.00  .0603 229   280   -1.94    4.96   -5.30    1.86    1.79   -1.64    -.09    -.00     .61     .34   -1.15     .23     .66
                                         -6.65     .06    3.51   -2.19    -.59     .77     .19     .38   -1.00    -.05    1.00    -.33
23.00    2.00  .0658 218   286   -1.65    4.52   -5.60    3.33     .24   -1.66    1.32   -1.02     .48     .71   -1.27     .60     .10
                                         -7.87    1.46    2.74   -3.07    1.17     .05    -.55    1.22   -1.19     .06     .79    -.66
23.20    4.00  .0274 216   286    3.32    -.08   -7.98    4.80    1.55   -1.74     .64   -1.86    1.02    1.59   -1.47     .08    -.30
                                        -10.65    3.84    4.57   -3.82     .26    -.43     .03    2.18   -1.61    -.63     .69    -.24
23.40    3.00  .1041 188   287   -3.76    7.53   -6.57    3.48    -.18   -1.25    1.39   -1.29     .50     .87   -1.34     .62    -.04
                                        -10.09    1.25    2.65   -2.87    1.44    -.32    -.57    1.45   -1.26     .01     .76    -.62
23.60    8.00  .1370 188   288   -7.89   11.71   -5.16    2.25   -1.14    -.76    1.61    -.87     .24     .44   -1.28     .77     .38
                                         -8.15    -.94    1.56   -2.14    2.09    -.42    -.63     .80    -.91     .16    1.08    -.88
23.80    1.00  .1699 186   288   -7.62   11.71   -5.80    2.51    -.86    -.83    1.24    -.46    -.01     .59   -1.45    1.04     .16
                                        -12.59    1.15     .71   -1.30     .94     .52   -1.17    1.17   -1.27     .57     .74    -.71
24.00    1.00  .1836 181   288   -7.78   11.78   -5.39    1.90    -.57    -.73    1.16    -.50    -.00     .58   -1.30     .89     .19
                                        -13.79    1.58     .10    -.47     .33     .81   -1.40    1.39   -1.37     .65     .54    -.53
24.20    5.00  .1890 179   327   -9.06   10.25   -4.81    3.57    1.70    -.18     .07   -1.49   -1.33     .36    -.97    1.66     .97
                                        -12.40    4.04    1.03    -.85   -2.01    -.21   -1.86    1.88    -.21    1.37    1.06    -.91
24.40   21.00  .1726 176   327  -10.13   11.62   -3.71    3.10     .98    -.99    -.91    -.71    -.73    1.31    -.53    1.49     .46
                                         -8.75    1.66     .78   -1.72   -1.68     .48    -.41    1.71     .08     .17     .65   -1.81
24.60   20.00  .1753 170   335   -6.46    8.41   -3.82    1.43    2.20   -1.71    -.16    -.85     .49    1.04    -.46     .32     .53
                                        -13.51    3.31     .44    -.33   -2.24    1.25    -.37    1.58    -.62    -.62     .81   -1.71
24.80   70.00  .1342   7   361  -27.21   13.09   -1.93    4.80    3.53     .82     .77     .87    2.20    3.49     .21     .68     .66
                                         -2.26    4.70    2.92    -.17   -1.65    1.22    -.18    2.16   -2.09   -1.73    -.73   -1.90
25.00   35.00  .3205   4   361  -26.60   17.27    7.39    2.68    7.67   -1.35   -1.55     .34    -.11    2.61    -.43    -.40     .63
                                         -2.86   20.87    8.18    -.51    1.68    1.50    2.44    4.15    -.50     .21     .97   -1.56
25.20   54.00  .3781   4   361  -28.44   12.65   -2.06   12.25   13.47  -12.86   -5.10    8.54    1.38     .20     .09    2.16     .15
                                          6.90   23.18    5.84   13.33    1.37   -8.09     .11    9.06    2.20    -.99     .94    -.25
25.40   70.00  .4685   4   361  -15.54   -1.47    7.75   -1.19   20.28  -13.54  -10.00   17.79    3.44   -6.08   -4.16    5.29    1.72
                                          1.64   38.67    5.71    8.92    5.66  -19.80     .77   10.47   10.39   -5.77   -4.31   -1.04
25.60   87.00  .5726   4   361   20.83  -11.09    7.49  -30.75   29.54  -14.11  -18.19   17.13   -4.63    -.59   -5.63    9.67     .74
                                         19.86   54.83   -8.52   -4.43   12.72  -21.49    1.28    1.81    9.71    -.14   -3.53    2.81
25.80  106.00  .6411   4   361   57.16  -24.13    5.78  -29.94   20.57  -19.80  -17.92   11.21   -7.61   -2.65   -5.99   11.24    5.43
                                         18.68   51.86  -21.70  -13.44    8.29  -21.48   -3.69    1.96   12.40    3.79    1.14    2.26
26.00  134.00  .6877   4   361   74.26  -35.43   10.44  -35.75   20.28  -16.78  -19.98   12.05   -7.48   -2.78   -2.71    8.72    4.55
                                         27.30   43.70  -24.36  -14.79    5.32  -20.95   -2.65   -2.02   11.86    4.76    2.97    3.22
26.20  177.00  .7397   4   361   77.82  -42.26   12.39  -35.11   19.00  -15.26  -21.06   10.92   -7.42   -3.74   -1.66    8.20    3.97
                                         29.90   41.68  -27.08  -17.51    5.67  -20.96   -2.44   -3.43   10.15    1.94    3.51    3.29
26.40  244.00  .7260   4   361   77.22  -45.19   13.53  -34.75   17.97  -17.99  -22.02    9.93   -6.41    -.91   -1.13    8.69    4.06
                                         25.99   39.20  -26.53  -17.94    6.43  -22.24   -2.30   -6.41    8.72    1.07    3.73    4.62
26.60  327.00  .6712   4   361   79.57  -46.55   22.27  -31.77   16.03  -23.16  -24.51   10.81   -7.42    1.74   -4.50    8.02    4.57
                                         14.39   34.68  -26.31  -15.67    9.77  -24.19    -.52   -6.81    8.23    3.29    1.78    5.19
26.80  422.00  .6712   4   361   73.74  -45.73   28.28  -33.38   13.53  -23.59  -24.25   11.22  -10.36    2.92   -7.98    9.03    4.73
                                         13.33   34.34  -21.63  -15.25   14.68  -25.96    -.03   -7.70    7.27    3.89    -.79    5.48
27.00  539.00  .6630   4   361   73.74  -43.15   21.06  -40.05   17.20  -18.35  -17.43   13.49  -12.03    -.76   -8.60   11.55    6.55
                                         21.72   37.92  -29.38  -18.27   10.56  -21.45    4.67   -5.33    4.74    -.47   -1.69    8.26
27.20  694.00  .6356   4   361   78.53  -47.15    9.44  -33.97   25.92  -24.50  -18.06   19.82    -.20    2.43   -6.11   11.02    6.61
                                         23.71   41.88  -31.28    1.79   22.24  -20.45    2.27   -2.41    7.98   -5.03   -3.77    6.10
27.40  919.00  .7507   4   361   88.76  -33.01   15.24  -50.60   18.50  -34.79  -35.21   11.01   10.16   10.36    7.85   14.51    1.17
                                         43.85   77.38  -21.04   23.96   22.26  -24.76  -11.10   -4.03    8.38   -5.82     .97   15.21
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                                            OWS-V ISENTROPIC SUMMARY,1967
                                              PROPERTY = TEMP.(C)
                                            FUNDAMENTAL PERIOD = 366 DAYS
LEVEL    F(1)       M FIRST  LAST   A(0)                                                     FOURIER COEFFICIENTS X 100
                      OBS.  OBS.
SURF.   18.94   .0080    1   328    .66-153.47    26.73    25.01    18.76    19.85   -10.17    -4.36    -7.22    12.57    -1.03    14.88   -13.95
                                       -416.70    82.18    -2.04    35.13     2.82    27.19   -18.36   -23.13    -5.41     -.65     9.19    15.24
22.60   25.84   .0002  268   272   -.01   1.91     -.07     -.64      .07      .39     -.08     -.29      .08      .23     -.09     -.19      .10
                                          -.06     -.96      .07      .49     -.07     -.33      .08      .25     -.09     -.21      .10      .17
22.80   25.21   .0018  268   276   -.17  20.64     1.21    -6.74    -1.19     3.88     1.17    -2.60    -1.14     1.86     1.11    -1.36    -1.07
                                          1.27   -10.21    -1.18     4.98     1.20    -3.14    -1.15     2.20     1.13    -1.58    -1.08     1.17
23.00   25.23   .0001  201   278   -.08   6.19     9.70    -8.57    -2.91     4.89     1.89    -2.78    -2.45     2.65     1.79    -1.64    -2.00
                                         13.12    -8.32    -5.78     7.02     1.75    -3.35    -2.37     2.76     2.12    -2.19    -1.79     1.33
23.20   24.40   .0005  197   278   -.08   6.32     7.15    -6.42    -3.30     5.16      .78    -1.94    -2.47     2.70     1.38    -1.51    -1.72
                                          7.13    -5.35    -5.82     6.65     1.18    -3.05    -1.72     2.19     2.16    -2.42    -1.18      .94
23.40   23.89  -.0002  193   312   -.03   2.02     5.71    -5.95    -1.20     3.77     1.28    -2.82    -1.64     2.05     1.95    -1.72    -1.48
                                          9.09    -5.68    -2.65     4.79     1.07    -3.24    -1.43     2.35     1.91    -1.95    -1.68     1.24
23.60   23.25   .0020  191   313   -.31  24.36    16.16    -5.51    -5.06     -.27      .65    -1.50      .33     2.62     1.75    -2.27    -2.06
                                         22.67   -12.07    -9.55     1.20     2.43     -.37      .42     2.23      .71    -2.73    -2.14     1.18
23.80   21.81   .0025  183   319   -.10  11.75     5.33    -7.54    -4.30     3.92     2.78     -.01    -2.13      .91     -.37     -.80    -1.06
                                        -14.58     1.58   -11.77    11.29     -.78     2.08    -5.70     2.92    -1.71     1.33    -2.09     3.46
24.00   21.05   .0028  183   319   -.11  12.63     5.07    -6.92    -4.35     3.37     2.71      .45    -2.04      .68     -.79     -.41     -.91
                                        -17.08     2.87   -12.42    11.21    -1.23     2.99    -5.99     2.93    -2.29     1.94    -2.06     3.60
24.20   20.28   .0036  183   328   -.19  17.55     7.86    -5.60    -3.53     2.22     1.84     -.36    -2.06     1.01     -.50      .29     -.96
                                        -14.79     3.68   -13.88    10.10    -2.96     3.49    -6.03     4.20    -2.40     2.65    -2.62     3.49
24.40   19.55   .0038  183   328   -.20  17.52     8.06    -4.28    -2.91      .87     1.54     -.27    -1.66     1.07     -.66      .34    -1.17
                                        -15.44     5.19   -13.98     8.90    -3.75     4.46    -5.96     4.56    -2.96     2.91    -2.89     3.79
24.60   18.89   .0034  183   328   -.16  14.98     5.63    -4.09    -3.32     1.22     2.08      .47    -2.05      .66     -.82      .54    -1.14
                                        -17.87     5.44   -12.77     8.87    -2.75     4.39    -6.17     3.59    -2.62     2.90    -2.47     3.36
24.80   18.26   .0030  183   328   -.14  13.57     5.32    -4.12    -3.60     2.52      .99      .62    -1.91     1.07    -1.35      .25     -.59
                                        -14.94     4.23   -11.78     8.86    -2.44     3.06    -4.78     2.91    -2.18     1.81    -1.24     2.88
25.00   18.22   .0009    1   328   -.18  25.03      .73    -1.21    -6.03     5.26     -.17      .19    -2.59     1.21    -2.04      .22    -1.03
                                          4.24     -.10    -8.24    10.75    -1.79     2.94    -3.82     3.44     -.80     1.65     -.06     2.83
25.20   17.69   .0002    1   328   -.18  21.69   -14.08     6.21    -4.43     2.29     5.01    -1.07    -2.55     5.22    -2.58     2.37      .51
                                         18.67    -8.74   -18.20    13.82    -7.92      .53    -2.30      .39      .16     2.37    -3.02     4.26
25.40   16.74   .0003    1   328   -.18  16.78    -4.27     -.36    -2.20    11.29     -.46    -4.02     -.32     2.54     -.46     3.75    -1.54
                                          6.93    -2.73   -12.16     3.91    -4.20     5.97    -6.75     2.68     1.58      .26    -1.57     4.19
25.60   15.72  -.0004    1   328   -.06   7.07    -6.75     2.63     1.97     2.26      .53    -2.73    -1.96     2.20      .89     1.77     -.00
                                          4.72    -7.99   -13.78    10.81    -2.63      .37    -2.06     2.71    -1.69     -.34    -1.16     3.97
25.80   14.52  -.0010    1   328    .05    .93    -3.70      .55     -.05    -1.91     -.82    -2.87      .08     1.19      .17     1.27      .41
                                         -3.98    -8.68    -7.38     6.60    -1.33     1.53    -1.08     1.40    -2.28    -1.85    -2.48     3.28
26.00   13.05  -.0006    1   328    .15  -9.83    -3.14    -1.42    -1.02    -2.37     2.69     -.58    -1.87      .77     1.05     -.62     -.80
                                         -8.71    -7.90    -3.05     5.99      .25     -.02     1.25    -1.30    -3.02     -.12      .05      .28
26.20   11.31   .0003    1   328    .24 -13.17    -6.69      .37     -.14    -2.10      .55    -1.64    -4.38    -2.12     2.52     1.34    -2.40
                                         -3.92     3.00     1.02     5.80     4.45     1.36    -2.47    -2.19    -2.00     -.12     -.41      .25
26.40    9.60   .0003    1   328    .15  -5.80    -7.79    -3.59     1.81     4.31      .39    -3.88    -5.92    -3.72      .14     1.80    -1.20
                                          1.46    -1.33     1.01      .03     3.91     2.32    -1.52    -1.62     -.30      .11     -.26    -1.65
26.60    7.65   .0004    1   328    .03   8.31    -1.74   -10.24    -5.53    11.47    -1.11    -7.20    -2.05     3.05    -4.29    -4.02     -.68
                                          3.27    -7.16      .07    -3.33    -1.43     8.67     2.78    -2.69    -2.02     -.54     -.48    -1.32
26.80    6.06   .0002    1   328   -.09   8.29      .48    -5.77    -5.78     3.13      .04     -.60     2.91     4.76    -3.17    -4.51    -2.24
                                          3.13   -11.00    -4.01      .24    -1.40     5.41     3.39    -2.50    -5.05    -3.12    -1.10      .97
27.00    4.80   .0010    1   328   -.19   1.63     -.09     3.49     3.05     2.37     2.96     1.44     -.43     -.03     -.17      .27      .21
                                         13.21     4.18     1.44     1.74    -2.63    -1.20     -.15     -.85    -2.55      .06     1.41     1.56
27.20    3.90   .0015    1   328   -.26   -.02     2.15     6.38     6.20     6.63     4.05      .69    -1.77    -2.11     -.24      .61     1.29
                                         17.76    11.14     7.67     2.15      .21    -1.21    -2.92    -1.21      .86     2.24     1.47     -.15
27.40    3.13   .0008    1   328   -.13   7.83     4.94     3.52      .83    -1.76     -.91    -1.16     -.68      .62      .88      .78      .16
                                          8.44     -.82    -3.37     -.31    -1.38     -.24      .81      .86      .74     1.31      .03     -.60
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                                                  OWS-V ISENTROPIC SUMMARY.1967
                                                    PROPERTY =SALINITY
                                                  FUNDAMENTAL PERIOD = 366 DAYS
LEVEL    F(1)     M    FIRST LAST   A(0)                                       FOURIER COEFFICIENTS X 100
                       OBS.  OBS.
SURF.   34.71   .0003    1   328   -.13   10.75    3.43    2.20   -3.47    2.27   -1.35   -3.60     .29    3.24     .07    1.14   -1.94
                                          13.46   -3.93   -6.74    3.99   -2.26    2.65   -1.57     .22     .56   -1.43   -1.69    3.34
22.60   34.34   .0001  268   272   -.00     .64    -.01    -.22     .02     .13    -.02    -.10     .02     .08    -.02    -.07     .03
                                           -.01    -.32     .02     .17    -.02    -.11     .02     .09    -.02    -.07     .03     .06
22.80   34.35   .0007  268   276   -.07    8.25     .56   -2.71    -.55    1.57     .54   -1.06    -.52     .77     .50    -.57    -.48
                                            .58   -4.09    -.55    2.01     .55   -1.27    -.53     .90     .52    -.66    -.49     .50
23.00   34.62   .0001  201   278   -.03    2.59    3.89   -3.52   -1.08    1.93     .74   -1.12    -.93    1.02     .69    -.62    -.79
                                           5.37   -3.48   -2.24    2.82     .66   -1.33    -.92    1.10     .80    -.83    -.71     .50
23.20   34.54   .0002  197   278   -.03    2.41    2.59   -2.31   -1.48    2.17     .18    -.65   -1.05    1.11     .52    -.59    -.67
                                           2.20   -1.70   -2.49    2.69     .44   -1.20    -.64     .80     .92   -1.02    -.40     .31
23.40   34.61  -.0001  193   312   -.01     .70    2.36   -2.36    -.54    1.62     .34   -1.07    -.50     .87     .66    -.72    -.49
                                           3.54   -2.12   -1.21    2.03     .32   -1.31    -.45     .92     .71    -.85    -.53     .48
23.60   34.64   .0007  191   313   -.11    8.97    6.24   -2.15   -1.98     .02     .23    -.60     .10    1.01     .70    -.92    -.73
                                           8.80   -4.58   -3.68     .55     .96    -.25     .19     .83     .34   -1.11    -.77     .44
23.80   34.36   .0009  183   319   -.03    3.85    1.79   -3.00   -1.56    1.63    1.08     .02    -.81     .30    -.24    -.32    -.32
                                          -5.58     .53   -4.23    4.41    -.26     .69   -2.16    1.02    -.68     .50    -.66    1.33
24.00   34.35   .0010  183   319   -.04    4.56    1.95   -2.68   -1.57    1.24    1.02     .15    -.58     .23    -.33    -.20    -.30
                                          -5.95     .86   -4.51    4.15    -.42    1.07   -2.17    1.06    -.89     .70    -.72    1.36
24.20   34.33   .0013  183   328   -.06    6.04    2.77   -2.06   -1.39     .80     .77     .00    -.73     .23    -.24     .08    -.24
                                          -5.68    1.46   -5.10    3.73    -.95    1.35   -2.24    1.37    -.91    1.01    -.86    1.28
24.40   34.34   .0013  183   328   -.07    6.18    2.73   -1.64   -1.19     .53     .70    -.03    -.80     .22    -.20     .27    -.29
                                          -5.82    1.84   -5.03    3.39   -1.17    1.49   -2.29    1.46    -.89    1.17    -.93    1.19
24.60   34.39   .0012  183   328   -.06    5.23    2.15   -1.31   -1.14     .42     .68     .15    -.75     .14    -.28     .26    -.25
                                          -5.65    1.85   -4.42    2.94    -.95    1.44   -2.09    1.16    -.82    1.06    -.74    1.07
24.80   34.45   .0010  183   328   -.05    4.61    1.88   -1.35   -1.18     .69     .44     .21    -.64     .23    -.40     .14    -.15
                                          -4.60    1.27   -3.86    2.78    -.72    1.06   -1.64     .90    -.69     .70    -.42     .91
25.00   34.70   .0003    1   328   -.06    7.96     .10    -.05   -1.93    1.45     .04     .10    -.81     .26    -.58     .13    -.30
                                           1.20    -.19   -2.68    3.03    -.61    1.02   -1.32     .99    -.26     .61    -.08     .85
25.20   34.78   .0001    1   328   -.05    6.97   -4.65    1.88   -1.24     .65    1.56    -.48    -.86    1.67    -.79     .70     .15
                                           6.32   -2.75   -5.48    4.37   -2.46    -.01    -.59     .13     .14     .71    -.98    1.31
25.40   34.75   .0001    1   328   -.06    5.38    -.91    -.21    -.61    3.25    -.19   -1.33    -.02     .77    -.25    1.16    -.45
                                           1.99    -.94   -3.43    1.28   -1.17    1.79   -1.88     .67     .47    -.04    -.41    1.28
25.60   34.70  -.0001    1   328   -.02    2.17   -1.62     .99     .59     .50     .06    -.68    -.53     .55     .20     .54     .02
                                           2.07   -1.71   -3.75    3.11    -.60     .11    -.56     .62    -.56    -.26    -.29    1.12
25.80   34.60  -.0001    1   328    .00     .64   -1.02     .48     .27    -.37    -.06    -.66     .12     .19    -.17     .29     .16
                                            .40   -1.50   -1.62    2.22    -.24     .54    -.42     .31    -.65    -.42    -.68     .99
26.00   34.48  -.0001    1   328    .03   -2.64    -.83     .01    -.24    -.58     .72    -.02    -.60     .12     .32    -.10    -.07
                                          -2.02   -1.33    -.41    1.58     .12    -.02     .21    -.46    -.82     .04     .02    -.02
26.20   34.32   .0001    1   328    .05   -3.14   -1.44     .13    -.04    -.44     .16    -.37   -1.13    -.53     .62     .41    -.47
                                          -1.24     .66    -.12    1.12     .98     .36    -.49    -.60    -.57    -.18    -.15    -.04
26.40   34.18   .0002    1   328    .01    -.77    -.96    -.52     .52    1.05     .05    -.81   -1.22    -.70     .03     .40    -.32
                                           1.59     .55     .54    -.05     .83     .45    -.29    -.51    -.10    -.11    -.02    -.36
26.60   34.05   .0002    1   328   -.01    2.01     .04   -1.52    -.71    2.33    -.01   -1.41    -.46     .68    -.72    -.65    -.01
                                           2.02    -.46     .18    -.45    -.45    1.48     .53    -.62    -.40    -.12    -.08    -.20
26.80   34.03   .0001    1   328   -.02    1.34     .11    -.86   -1.01     .60    -.14    -.18     .43     .79    -.44    -.71    -.32
                                            .62   -1.59    -.74    -.28    -.34     .84     .53    -.40    -.75    -.61    -.25     .09
27.00   34.10   .0001    1   328   -.04    -.06    -.03     .76     .63     .36     .39     .34     .05    -.04     .02     .02    -.01
                                           1.84     .83     .22     .12    -.52    -.33    -.05    -.04    -.45    -.15     .19     .30
27.20   34.22   .0003    1   328   -.05     .23     .55    1.06    1.12    1.06     .68     .07    -.28    -.33    -.14     .15     .27
                                           3.37    2.21    1.18     .54     .04    -.18    -.41    -.20     .17     .27     .11    -.01
27.40   34.37   .0001    1   328   -.01     .90     .40     .68     .19    -.34    -.10    -.11    -.05     .18     .13     .00    -.02
                                           1.40    -.22    -.31     .03    -.13    -.02     .09     .28     .14     .26    -.07    -.06
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                                        OWS-V ISENTROPIC SUMMARY.1967
                                          PROPERTY = DEPTH(M.)
                                        FUNDAMENTAL PERIOD = 366 DAYS

LEVEL    F(1)      M     FIRST LAST    A(0)                                    FOURIER COEFFICIENTS
                         OBS.  OBS.
SURF.    24.82  -.0019     1   328     -.31     .48    -.02    -.01    -.10    -.04     .04    -.07     .04     .01    -.03    -.00     .03
DENSITY                                        1.26    -.32    -.03    -.04    -.05    -.02     .05     .02     .05    -.01    -.06     .03
22.60    30.00  0.0000   268   272    -3.14    3.62    -.11    -.97     .32     .58    -.28    -.34     .29     .22    -.27    -.12     .25
                                                .11   -1.57     .28     .74    -.29    -.44     .29     .28    -.28    -.17     .26     .09
22.80    35.00  -.0082   268   276      .70    -.96     .11     .32    -.11    -.19     .11     .14    -.11    -.11     .11     .09    -.11
                                                .10     .48    -.11    -.24     .11     .16    -.11    -.12     .11     .10    -.11    -.08
23.00    12.00   .0548   201   278    -2.34    4.27   -3.08    1.26     .21    -.50     .02     .22     .07    -.33     .15     .13    -.08
                                              -4.70     .15    1.35   -1.04     .14     .20     .12    -.33     .08     .22    -.13    -.12
23.20    14.00   .0712   197   278    -3.92    6.18   -2.98     .73    -.02    -.10     .14     .00    -.05    -.22     .34    -.04    -.11
                                              -4.57    -.75    1.19    -.63     .35    -.15     .06    -.23     .28     .05    -.21    -.07
23.40     5.00   .1425   193   312    -8.72   11.02   -1.94     .45   -1.57     .46    -.06     .79    -.58     .12    -.21     .33    -.34
                                              -6.47    -.71   -1.27     .49     .44     .44    -.34    -.30     .17     .05     .04    -.18
23.60     7.00   .1479   191   313    -8.76   11.57   -1.91    -.53   -1.83    1.09     .44     .79   -1.03    -.05    -.28     .57    -.25
                                              -7.06   -1.28   -1.61    1.54     .70     .27    -.99    -.33     .27     .37     .09    -.15
23.80     1.00   .1452   183   319    -4.73    9.58   -3.81   -2.08   -1.97    2.31    1.60    1.08   -1.75    -.77    -.70     .94     .18
                                             -12.66    -.39   -1.73    3.97     .93     .34   -2.55    -.61     .03    1.28     .37     .30
24.00     4.00   .1741   183   319    -8.65   12.98   -2.09   -2.67   -2.82    2.15    1.82    1.44   -1.74    -.88   -1.01     .89     .32
                                             -10.84   -1.65   -3.11    4.18    1.34     .74   -2.70    -.80    -.21    1.40     .59     .45
24.20     6.00   .1233   187   328      .09    8.73   -5.28   -5.75   -3.84    3.07    3.47    2.70   -1.26   -1.27   -1.87    -.00     .05
                                             -15.98   -2.54   -2.58    6.93    3.04    1.45   -3.47   -1.78   -1.34    1.07     .79    1.29
24.40    10.00   .2411   187   328   -16.18   18.68    1.74   -3.37   -4.00    1.75    1.77    1.42   -1.61    -.59    -.87     .80     .24
                                              -7.07   -3.21   -5.92    4.38    1.45    1.23   -2.71    -.38    -.35    1.33     .29     .55
24.60    15.00   .2603   187   328   -18.79   20.74    3.32   -3.95   -4.52    1.60    1.68    1.48   -1.37    -.24    -.93     .60    -.01
                                              -5.36   -4.15   -7.06    4.61    1.53    1.51   -2.56    -.14    -.60    1.06     .10     .70
24.80    21.00   .2712   183   328   -19.89   21.66    3.72   -3.44   -5.03     .86    1.70    1.79   -1.19     .08    -.83     .44    -.57
                                              -5.10   -4.09   -7.60    3.90    1.81    2.13   -2.43    -.05    -.72     .77    -.33     .80
25.00   152.00  -.0521     1   328   -46.99   74.37    8.72   -9.91   -6.69   -6.24   -3.03   -1.57   -5.16   -2.54   -3.96   -3.00   -2.79
                                                .60   25.03   -1.67    9.93    7.46    4.45    -.14     .35   -2.32    -.72   -2.59    -.65
25.20   192.00  -.0966     1   328   -60.13   87.27   11.88  -10.00   -7.97   -5.14   -1.94     .83   -3.70   -1.90   -5.04   -4.02   -2.43
                                              -2.35   24.77   -4.05   11.39    9.12    6.29     .31     .26   -7.25    -.84    -.77    1.99
25.40   241.00   .0329     1   328-115.99  105.06   43.48    6.76   -6.34   -3.08  -12.91   -7.61   -4.46    1.41     .63    2.95    -.28
                                             -17.99   10.04   -4.12   14.79   15.36   11.51   -5.45   -3.69   -3.78    -.97    2.65    5.17
25.60   296.00   .0822     1   328-140.95  130.01   49.92    1.07  -18.63    6.70    -.08  -13.15  -16.24    3.88    7.14    9.11   -1.21
                                             -16.30   17.69   -6.40   10.70     .11   14.67    2.00   -5.18   -5.41    1.10    5.85    6.99
25.80   340.00   .0411     1   328-139.84  128.69   38.11   14.19   -8.57    4.71  -15.49  -22.65   -6.54   21.14    7.83    5.54   -3.92
                                             -17.21    2.78  -20.53   30.89   12.25   14.53  -17.20  -17.69     .72   14.16    9.03   10.26
26.00   385.00  -.0055     1   328-129.03  125.98   34.00   13.94  -12.21    3.08  -11.29  -24.62   -4.71   25.74    3.24    -.36   -3.65
                                               2.80   11.68  -25.09   29.62    1.35   17.80   -8.47  -14.83    -.91   10.78    2.92   13.12
26.20   430.00   .0411     1   328-118.02  120.24   37.21    2.96  -14.55    6.49   -7.70  -21.07   -4.61   21.39     .45    -.93   -2.88
                                              17.21   13.26  -21.79   30.86    -.23   14.71   -5.45  -10.97   -1.41    7.06    4.01   12.59
26.40   482.00   .2177     1   328-121.98  119.23   39.65    3.66  -13.07    3.28   -9.50  -16.86   -2.05   16.96    -.95    1.11   -3.12
                                              38.02   16.96  -23.72   33.19     .15   11.69   -7.70   -5.91   -1.08    2.92    2.68   13.91
26.60   572.00   .2932     1   328-136.36  118.98   42.93    9.99  -13.32   -3.29   -8.94  -14.38   -3.20   11.45    1.36    6.76   -2.01
                                              46.49   13.51  -29.27   27.83   -1.72    8.57  -11.16   -5.27     .32    3.30     .74   12.51
26.80   667.00   .3589     1   328-141.01  120.17   49.37    9.91  -15.21   -3.42   -9.49  -15.40   -5.18    9.37    2.75    8.37    -.90
                                              51.83    8.11  -28.60   14.90   -3.36    7.75   -8.51   -2.95    2.36    1.18     .65   11.94
27.00   781.00   .4575     1   328-147.75  131.18   56.70    -.17  -20.48   -3.04   -6.89  -12.88   -2.45    7.15    2.29    7.28   -3.18
                                              54.26   -3.18  -30.29   10.30    1.51   11.49   -6.82   -2.77     .66   -2.30     .45   12.48
27.20   926.00   .5123     1   328-139.64  132.88   57.11  -12.28  -19.27   -1.35   -2.94   -7.88   -2.93    3.71    1.88    8.62   -1.79
                                              56.86   -7.60  -29.05   15.04    7.82    8.43  -10.25   -3.25    2.24    3.34    1.91    8.58
27.401193.00   .1890     1   328   -97.16   91.78   41.48  -15.85  -20.87    9.11    7.36    -.10   -7.77   -1.40    5.07    7.41   -4.29
                                              29.73   -9.43  -20.65   16.16    9.48    5.33  -17.96   -1.73    5.43   11.08    2.94    3.46
                                        OWS-V ISENTROPIC SUMMARY,1968
                                          PROPERTY = TEMP.(C)
                                        FUNDAMENTAL PERIOD = 367 DAYS
LEVEL    F(1)     M    FIRST LAST   A(0)                                 FOURIER COEFFICIENTS X 100
                       OBS.  OBS.
SURF.   15.88  .0055   61   362    3.10-260.49  -41.92   15.22  -15.79   17.21   -5.26    6.57  -21.37   14.25    1.36  -15.17   -8.11
                                       -357.31  106.42  -24.48   34.06    4.79   -7.48  -19.56     .33    -.92    4.24   14.01  -15.95
22.40   26.74  .0002  223   224    -.01   1.16    -.92     .59    -.25    -.04     .22    -.27     .21    -.09    -.04     .13    -.16
                                         -1.51     .26     .24    -.41     .38    -.23     .04     .11    -.19     .19    -.11     .01
22.60   26.30 -.0014  223   254     .07 -11.79    7.15   -2.61     .15     .35    -.38    1.00   -1.84    1.70    -.17   -1.75    2.46
                                         10.76     .49   -2.94    2.15   -1.17    1.01   -1.06     .22    1.33   -2.37    1.74     .20
22.80   26.50 -.0036  203   258     .12 -20.58   15.54  -10.30    6.84   -5.06    3.51   -1.27   -1.14    2.41   -2.07     .99    -.58
                                         34.70   -9.41    1.31    1.18   -2.47    3.73   -4.57    3.92   -2.09     .32     .15     .39
23.00   26.00 -.0045  203   259     .18 -30.31   19.22   -8.96    4.08   -3.50    3.15    -.82   -2.00    2.65    -.69   -1.68    2.10
                                         38.26   -5.41   -2.28    1.79   -1.32    2.74   -4.09    2.88    -.00   -1.92    1.15    1.09
23.20   25.53 -.0037  203   269     .11 -19.76   16.87  -12.62    7.98   -4.08    1.50    -.03    -.98    1.67   -1.59     .49     .83
                                         37.64  -11.70    1.49    2.93   -4.22    3.92   -3.11    2.30   -1.23    -.18    1.04    -.64
23.40   24.33 -.0013  201   278    -.00  -4.49   12.27  -10.59    2.06    2.21    -.24    -.56   -2.42    3.94   -1.47   -1.05     .92
                                         20.51   -8.61   -3.40    6.94   -2.71     .18   -2.19    2.73     .58   -3.09    2.02    -.44
23.60   23.29 -.0009  198   302     .06 -10.45    8.34   -4.20    -.92    3.28   -1.86    1.10   -3.23    4.38   -2.44     .50    -.18
                                          6.40    2.21   -6.39    6.38   -2.99     .83   -1.92    2.14     .62   -2.79    2.37   -1.77
23.80   22.28 -.0010  190   302     .07 -12.25    6.88   -1.74   -2.01    3.89   -2.84    1.13   -2.79    5.46   -4.12    1.35   -1.36
                                         -6.50   10.12  -10.18    8.26   -5.01    2.22   -2.69    4.14   -1.83   -1.73    1.66    -.59
24.00   21.53  .0011  189   302     .08 -13.13    5.56     .69   -3.81    4.54   -3.19    1.80   -3.43    5.75   -4.42    1.87   -1.82
                                        -10.42   13.18  -11.29    7.75   -4.26    2.00   -2.53    3.60   -1.27   -2.08    2.15   -1.41
24.20   21.41 -.0014  187   302     .11 -16.39    6.57     .21   -2.83    3.10   -1.42     .16   -2.17    4.52   -3.23     .97    -.99
                                          5.31    6.23   -6.04    3.37    -.78    -.58    -.88    2.32    -.15   -2.82    2.67   -1.96
24.40   20.85 -.0023  170   330     .19 -22.70    2.64     .88   -3.04    4.43    -.69    -.19   -2.51    4.55   -3.80    1.53   -1.33
                                          3.51    6.83   -3.35    3.35     .47   -1.81   -1.41    2.48    -.55   -2.24    2.51   -1.76
24.60   19.97 -.0019  169   334     .21 -25.31    2.87    1.08   -2.87    4.29    -.03   -1.38   -1.60    4.51   -4.07     .90    -.48
                                         -3.65   11.26   -5.50    4.69    -.30   -1.54   -2.06    3.79   -1.87   -1.83    2.43    -.78
24.80   19.38 -.0021  159   351     .18 -24.00    3.06    2.62   -3.67    4.89     .46    -.53   -1.54    3.44   -3.48    -.16    -.05
                                          1.91   11.13   -5.68    4.95    -.42    -.67   -3.17    3.09   -2.13   -1.83    2.24    -.55
25.00   18.04 -.0011  122   362     .40 -41.70   12.55    -.01   -8.75    8.76   -3.11   -2.27     .71   -1.45   -3.12    -.91   -2.02
                                        -15.00    1.34    -.83   -1.15   -2.72    2.03   -6.96    2.37    -.60   -4.27    4.34    -.08
25.20   17.46 -.0015  122   362     .34 -31.69    9.61    -.27   -6.54    6.20   -1.75   -2.02     .14   -2.08   -3.62   -1.26   -1.43
                                         -9.97     .41   -2.91    -.65   -2.07    -.19   -4.88     .16   -1.44   -1.95    2.35    1.54
25.40   16.91 -.0020  109   362     .21 -14.09    4.36   -2.03   -1.38    3.45   -3.59    2.28   -2.23   -3.88    -.23   -3.47   -1.51
                                         -4.49    2.99   -6.96    -.71    1.71   -5.10   -3.29    2.51   -5.88    -.07    4.96   -2.66
25.60   15.88 -.0012   57   362     .12  -3.78    -.43   -1.50     .85    3.39   -2.87     .60     .01   -3.32     .10   -4.13    -.31
                                           .67     .24   -6.44     .49     .34   -3.14   -2.09     .16   -4.87    -.18    3.99   -2.29
25.80   14.52 -.0001   57   362     .05   -.48   -1.88   -1.05    2.75     .94   -2.51    -.03    1.71   -1.29     .57   -1.01    -.13
                                          2.72   -2.01   -2.71   -2.19    3.10   -2.46    1.56   -1.12   -2.93     .84    1.01     .55
26.00   13.18  .0004   57   362    -.01    .10    1.60    -.08    -.04    -.11   -2.27    1.17    1.37    -.12    -.46    -.58    -.38
                                           .22   -2.38    1.45   -2.38    3.79   -3.28    2.65    -.88    -.43    -.16     .40     .12
26.20   11.70  .0005   57   362    -.02   1.85     .40     .06    -.04    1.26   -1.75    1.89     .78    -.51   -1.75     .47    -.74
                                         -2.34   -1.36    1.91   -1.81    3.14   -3.11    2.17   -3.34    1.86   -2.24     .14    1.69
26.40   10.05  .0003   57   362    -.09   7.17    -.44     .43     .53     .96   -2.00     .76    3.96   -2.06   -1.58   -1.13     .98
                                         -2.13     .54    1.55    1.09    2.54   -1.32    -.10   -4.27    3.23   -1.73    1.89    1.99
26.60    7.58  .0010   61   362     .08  -5.05  -11.28    2.09    7.53    1.34   -3.71     .14    5.84   -4.14     .34   -5.06    5.82
                                          4.84    2.74   -6.50    3.51     .28    -.42     .95    1.36   -3.32   -2.42     .29    3.81
26.80    5.84  .0004   61   362     .12  -7.20   -8.80    2.41    6.69    -.91   -4.89    -.38    4.19   -2.15    -.66   -2.47    4.89
                                          2.92     .35   -8.16    5.08   -2.17   -2.53    1.46    3.70   -2.80   -1.31   -1.10    1.70
27.00    4.69  .0002   61   362     .07  -4.47   -2.53    1.11     .61     .58   -4.27   -1.03    1.22   -1.09     .69    1.38     .21
                                          3.91   -2.95   -5.87    2.14    -.45    -.60    -.56    3.17     .89    -.99     .72    -.33
27.20    3.93  .0012   61   362    -.02   1.40     .14     .30    -.48     .70   -1.56    -.39    1.32     .31     .55     .18    -.46
                                          1.54    -.19   -1.58    1.87    -.16     .50    -.91    2.38    -.56    -.64    1.37     .47
27.40    3.17  .0011   61   362    -.05   2.04    1.62    -.57     .22     .31    -.69    -.26    2.03    -.01    -.19    -.09     .43
                                          1.19    1.77    -.68    1.16     .61   -1.46    1.04    1.22     .14   -1.57     .73     .35
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                                   OWS-V ISENTROPIC SUMMARY.1968
                                     PROPERTY =SALINITY
                                   FUNDAMENTAL PERIOD = 367 DAYS
LEVEL    F(1)      M   FIRST  LAST   A(0)                                 FOURIER COEFFICIENTS X 100
                        OBS.  OBS.
SURF.   34.72  -.0005    61   362    .01  -3.03   3.21  -3.86   3.10   2.54  -4.34   2.78  -1.05   1.08    .24  -1.01   -.75
                                          11.61  -6.60   1.15   2.24  -1.51   1.10  -2.50   1.70   -.27  -2.96   4.69  -3.28
22.40   34.44   .0001   223   224   -.00    .39   -.31    .20   -.08   -.01    .07   -.09    .07   -.03   -.01    .04   -.05
                                           -.50    .09    .08   -.14    .13   -.08    .01    .04   -.06    .06   -.04    .00
22.60   34.52  -.0006   223   254    .03  -4.69   2.89  -1.12    .16    .07   -.15    .47   -.83    .75   -.06   -.77   1.07
                                           4.41    .10  -1.12    .86   -.54    .50   -.49    .09    .60  -1.04    .76    .09
22.80   34.87  -.0015   203   258    .05  -8.68   6.40  -4.12   2.73  -2.13   1.60   -.65   -.45   1.08   -.95    .45   -.24
                                          14.30  -3.75    .51    .37   -.86   1.49  -1.97   1.75   -.95    .13    .11    .12
23.00   34.93  -.0018   203   259    .07 -12.45   7.79  -3.53   1.59  -1.47   1.41   -.44   -.81   1.14   -.34   -.66    .85
                                          15.52  -2.10   -.94    .63   -.41   1.08  -1.73   1.28   -.06   -.79    .49    .44
23.20   35.00  -.0015   203   269    .04  -7.95   6.69  -4.92   3.10  -1.64    .68   -.08   -.41    .74   -.68    .18    .37
                                          14.90  -4.55    .55   1.10  -1.59   1.49  -1.30   1.00   -.51   -.11    .46   -.24
23.40   34.80  -.0005   201   278    .00  -2.22   4.91  -4.07    .81    .76    .01   -.26   -.95   1.58   -.63   -.40    .41
                                           8.28  -3.26  -1.33   2.60  -1.00    .10   -.93   1.13    .18  -1.21    .84   -.20
23.60   34.64  -.0003   198   302    .02  -4.21   3.11  -1.51   -.40   1.38   -.84    .45  -1.25   1.73   -.98    .23   -.11
                                           2.05   1.13  -2.54   2.55  -1.24    .30   -.69    .83    .23  -1.09    .93   -.71
23.80   34.53   .0000   190   302    .02  -4.22   2.79   -.62   -.93   1.35  -1.02    .68  -1.17   1.91  -1.48    .58   -.55
                                          -2.22   3.71  -4.02   3.03  -1.77   1.02  -1.08   1.32   -.56   -.58    .61   -.30
24.00   34.51   .0001   189   302    .03  -4.37   2.12    .21  -1.51   1.68  -1.18    .80  -1.32   2.06  -1.67    .81   -.67
                                          -3.95   4.79  -4.32   2.92  -1.56    .83   -.97   1.23   -.45   -.69    .82   -.63
24.20   34.74  -.0005   187   302    .04  -5.67   2.46    .05  -1.04   1.05   -.54    .23   -.84   1.59  -1.23    .44   -.32
                                           2.04   2.15  -2.24   1.20   -.30   -.07   -.34    .72   -.04   -.98   1.05   -.83
24.40   34.80  -.0008   170   330    .07  -7.98   1.09    .34  -1.17   1.50   -.25    .12   -.95   1.59  -1.45    .57   -.37
                                           1.34   2.46  -1.36   1.18    .17   -.47   -.55    .79   -.22   -.78   1.00   -.64
24.60   34.75  -.0007   168   334    .07  -8.68   1.15    .13  -1.20   1.31    .25   -.14   -.71   1.32  -1.36    .47   -.09
                                          -1.46   3.80  -2.19   1.76    .07   -.17   -.98   1.05   -.58   -.44    .85   -.46
24.80   34.82  -.0007   159   351    .06  -7.76    .99    .75  -1.34   1.56    .30   -.00   -.52   1.00  -1.10    .02    .08
                                            .69   3.52  -1.97   1.76   -.06    .01  -1.19    .90   -.70   -.53    .79   -.36
25.00   34.64  -.0004   122   362    .13 -13.22   3.90   -.12  -2.97   2.82   -.95   -.68    .24   -.62   -.97   -.08   -.64
                                          -5.01    .13   -.33   -.28   -.86    .78  -2.32    .67   -.17  -1.24   1.39   -.19
25.20   34.71  -.0004   122   362    .10  -9.79   3.09   -.13  -2.05   1.98   -.57   -.58    .06   -.67  -1.05   -.21   -.35
                                          -2.84    .16   -.83   -.11   -.62    .03  -1.47    .06   -.38   -.47    .73    .38
25.40   34.80  -.0006   108   362    .06  -4.16   1.32   -.62   -.42   1.09  -1.11    .71   -.61  -1.20    .05   -.98   -.46
                                          -1.08    .93  -1.92   -.18    .55  -1.41   -.98    .79  -1.63   -.03   1.48   -.71
25.60   34.75  -.0004    57   362    .03  -1.06   -.06   -.48    .13   1.04   -.73    .11   -.00   -.94    .07  -1.05   -.08
                                            .34    .14  -1.91    .11    .14   -.80   -.56    .02  -1.40    .01   1.18   -.66
25.80   34.61  0.0000    57   362    .02   -.54   -.74   -.49    .83    .57   -.53   -.10    .42   -.44    .17   -.09    .05
                                            .82   -.87   -.81   -.84   1.03   -.61    .63   -.33  -1.12    .20    .30    .24
26.00   34.52   .0001    57   362   -.01    .18    .57   -.04   -.02   -.10   -.60    .42    .28    .01   -.13   -.12   -.12
                                           -.16   -.64    .42   -.52    .95   -.98    .73   -.27   -.12    .01    .12    .09
26.20   34.40   .0001    57   362   -.00    .32   -.00   -.06    .13    .25   -.45    .31    .19   -.03   -.45   -.01   -.15
                                           -.65   -.28    .28   -.48    .74   -.72    .49   -.79    .43   -.40   -.10    .46
26.40   34.27   .0001    57   362   -.02   1.33   -.13   -.02    .33    .25   -.53    .16    .79   -.37   -.29   -.31    .29
                                           -.29    .17    .30    .02    .58   -.24    .02   -.88    .67   -.36    .31    .51
26.60   34.04   .0002    61   362    .01  -1.08  -2.05    .49   1.34    .26   -.71   -.03   1.15   -.75    .10   -.98   1.14
                                            .92    .61  -1.13    .49    .11   -.03    .14    .29   -.57   -.50    .15    .63
26.80   33.99   .0001    61   362    .02  -1.30  -1.49    .52   1.10   -.21   -.73   -.09    .83   -.39   -.12   -.50    .80
                                            .30    .07  -1.35    .76   -.36   -.42    .21    .57   -.49   -.31   -.28    .27
27.00   34.07   .0001    61   362    .01   -.77   -.38    .26    .09    .13   -.46   -.11    .19   -.10    .11    .25   -.00
                                            .76   -.34   -.84    .52   -.01   -.10   -.05    .37    .11   -.13    .09   -.08
27.20   34.23  0.0000    61   362   -.01   -.52    .34    .65    .63    .47   -.42   -.46   -.04    .28    .30   -.10   -.12
                                           -.64  -1.38  -1.07    .09    .08    .46   -.16    .01   -.32   -.08    .53    .12
27.40   34.39   .0000    61   362   -.01    .17    .20    .05    .11    .12   -.04   -.04    .09    .03    .06   -.04    .05
                                            .07    .07   -.17    .18    .23   -.13    .27    .07    .01   -.16    .17    .06
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                              OWS-V ISENTROPIC SUMMARY,1968

                                PROPERTY = DEPTH(M.)

                              FUNDAMENTAL PERIOD = 367 DAYS

LEVEL   F(1)      M  FIRST  LAST   A(0)                      FOURIER COEFFICIENTS
                      OBS.  OBS.
SURF.  25.57  -.0017   61   362    -.77     .62     .13    -.05     .05    -.00    -.06     .01     .10    -.09     .03     .04    -.01
DENSITY                                    1.12    -.43     .11    -.08    -.02     .05    -.03     .06     .00    -.07     .04    -.01
22.60   6.00   .0191  223   254   -1.00    1.64    -.89     .21     .05     .03    -.11    -.02     .28    -.38     .17     .20    -.42
                                          -1.34    -.17     .39    -.16     .02    -.12     .27    -.20    -.10     .39    -.38     .08
22.80   1.00   .1230  203   258   -7.48   11.92   -5.35    -.27    1.96    -.51   -1.08     .85     .60   -1.41     .77     .45    -.94
                                          -6.96   -3.12    3.44    -.50   -1.24     .55     .99   -1.26     .09    1.10   -1.09     .17
23.00   9.00   .0574  203   259   -3.05    5.22   -3.19    1.01     .34    -.61     .32    -.20     .49    -.80     .60     .07    -.66
                                          -4.12    -.67    1.77   -1.25     .44    -.10     .25    -.31    -.09     .71    -.94     .55
23.20  18.00  0.0000  203   269   -1.62    3.24   -3.26    2.57   -1.01    -.33     .65    -.22     .01    -.43     .82    -.47    -.33
                                          -5.64    1.66     .65   -1.65    1.29    -.35    -.02    -.26     .43     .08    -.75     .76
23.40   2.00   .0628  201   278    -.39    2.40   -4.65    3.70    -.75    -.48    -.37     .77     .08    -.69     .37     .13    -.35
                                          -8.88    3.48     .82   -1.87     .39     .34     .49    -.93     .28     .37    -.36     .11
23.60   4.00   .0792  198   302   -1.21    3.68   -5.18    3.53    -.45    -.17    -.95     .72     .30    -.24    -.05    -.02    -.34
                                          -3.99    3.32    1.02   -1.51    -.16     .24     .87    -.69    -.00    -.03    -.02     .10
23.80  23.00   .0410  190   302   -1.15    3.64   -4.90    2.93    -.09    -.30    -.53     .34     .29    -.39     .36    -.22    -.12
                                          -5.41     .74    2.58   -2.37     .72    -.58    1.22   -1.08     .68    -.49     .29    -.46
24.00  13.00   .0847  189   302   -1.73    4.17   -4.79    3.07    -.44    -.31    -.44     .52     .08    -.20    -.03     .22    -.36
                                          -9.77    2.96     .80   -1.29    -.02     .37     .30    -.38    -.03     .18    -.12    -.16
24.20  37.00   .0328  187   302   -1.73    3.92   -4.30    2.90    -.41    -.71     .16     .09     .37    -.45     .17     .02    -.12
                                          -3.46    -.05    2.61   -2.95    1.49    -.64     .96    -.96     .48    -.31     .39    -.65
24.40   1.00   .0984  170   330    5.74   -1.44   -6.60    1.10    1.95   -2.06     .65     .16    2.26   -2.12     .06     .61     .71
                                         -21.15    6.82     .69     .49   -1.43    1.99     .27    -.73   -1.53    1.46     .21   -1.53
24.60  19.00   .0847  168   334    2.72     .13   -5.15    2.31    1.37   -2.41     .41    -.09    1.70   -1.71     .01    1.43     .54
                                         -15.15    5.22    1.07   -1.58    -.51    1.18     .80    -.81    -.67    1.36     .52   -2.04
24.80  24.00   .1148  159   351    -.99    -.79   -3.26    2.96    1.12   -2.17    1.85    1.21    1.82    -.06    -.94    2.02    -.77
                                         -12.37    6.83    1.98   -2.68    2.41     .42    1.38   -1.66   -1.23     .35    -.44   -1.91
25.00   8.00   .1339  122   362   10.87   -6.15    2.81    1.42    1.82   -3.14     .87    1.21   -1.32     .55   -2.31    1.37    -.30
                                         -24.23    5.92    -.75   -8.46    3.78   -3.68     .42   -1.70   -2.50    1.34   -1.15   -1.24
25.20  15.00   .1967  122   362    4.87  -14.25    7.00    3.91    -.56   -1.25    2.28    -.07     .46     .40   -2.22    2.22   -1.35
                                         -16.08    8.64    3.31   -8.64    4.77    -.44   -1.75     .04    -.82   -1.02    1.54   -1.71
25.40  76.00   .0656  108   362    2.31  -15.77   11.85    -.11    2.00    -.41     .50     .42    2.24   -1.76   -1.97    4.35   -4.50
                                         -13.30   22.00   -3.60  -10.93   10.04   -1.52   -5.06    3.27   -1.04   -2.43    2.02    -.55
25.60  85.00   .0628   57   362   34.60  -59.31   19.01   11.40   -1.18    1.12   -7.38    2.84    3.24    1.05   -1.60   -4.38   -6.54
                                          -1.12   15.33  -14.13    -.77    8.79     .52  -15.81    8.77   -3.94    1.81    9.00  -17.35
25.80 246.00  -.3333   57   362   15.98  -42.17   28.93   10.77   -4.29     .36  -10.66    8.00    -.16    1.90    1.89  -11.26   -9.56
                                          -3.71   25.08  -14.88    4.12    8.01   -4.31  -19.80   10.51   -7.89    3.44   15.99  -23.70
26.00 350.00  -.5109   57   362   11.01  -35.04   34.64    3.02    -.24    1.12  -11.03    7.91    -.77     .61    3.72  -11.99  -14.37
                                          -4.18   30.97  -18.78    5.23    8.62   -4.39  -24.23   12.18  -13.86    6.64   18.16  -21.36
26.20 414.00  -.4891   57   362    8.66  -32.43   29.64    4.12     .27    3.51  -13.45    7.08    1.91    -.14    4.23  -14.24   -8.06
                                            .37   27.74  -14.19    2.75   10.16   -5.91  -17.62    7.16  -13.06    6.42   21.94  -23.23
26.40 459.00  -.3934   57   362   16.25  -40.85   26.68    3.26     .67    5.35  -11.78    5.63     .45    -.12    5.80  -11.15   -8.53
                                           8.27   22.55  -12.68    2.12    8.12   -4.63  -13.55    8.67  -14.46    5.39   19.73  -19.69
26.60 470.00  -.1858   61   362   37.74  -58.07   18.01   -1.21    1.91   10.95   -8.82    2.64   -3.27     .42    6.41   -6.33   -9.59
                                          21.43   17.36  -18.87   -1.84    8.71     .35   -7.63    6.96  -15.06    3.47   16.67  -16.86
26.80 556.00  -.1612   61   362   36.38  -54.99   17.90   -3.84   -2.43   13.56   -7.49    1.20   -2.83    2.43    5.99   -5.19  -10.03
                                          19.57   17.12  -19.15   -3.28    9.60    3.71   -5.41    4.97  -14.55    3.49   13.35  -14.50
27.00 679.00  -.1913   61   362   37.38  -54.52   17.44    1.45  -10.64   14.63   -2.97   -1.01    3.18   -1.49    2.51     .35  -15.11
                                          21.33    8.18  -13.32    -.77    4.01    9.21   -7.46     .87   -9.49   -3.69   12.91   -9.91
27.20 872.00  -.2705   61   362   26.42  -50.34   21.59   10.82  -19.98   17.75    -.28   -3.42    8.84   -8.18     .35    6.07  -21.00
                                          26.68    5.23   -4.23    1.17   -3.97   12.16  -11.13   -2.47   -2.20   -9.29   12.96   -6.98
27.401129.00  -.2377   61   362   20.68  -50.96   21.62   18.53  -22.60   20.29   -4.89   -4.52    1.49    -.88     .92    5.19  -23.96
                                          35.78    6.32     .24   -5.26   -7.63    9.96   -2.50   -6.40    5.95  -14.84   18.55  -10.65
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                                        OWS-V ISENTROPIC SUMMARY,1969
                                          PROPERTY = TEMP.(C)
                                        FUNDAMENTAL PERIOD = 366 DAYS
LEVEL    F(1)      M     FIRST LAST  A(0)                                FOURIER COEFFICIENTS X 100
                         OBS.  OBS.
SURF.   17.88 -.0033    3   365   2.82-287.61   23.40   28.43  -22.73   22.41  -21.75   -4.93    5.04    1.32     .98   -8.69    5.85
                                      -373.62   86.98  -28.14  -11.76  -33.23   24.67  -32.31   14.04   -7.86   -4.85   -5.00   21.57
22.60   25.19  .0019  209   246   -.03   6.35   -8.17    9.46   -8.97    6.50   -2.99    -.23    2.27   -3.05    3.05   -2.71    2.14
                                       -23.26   11.38   -5.11    -.08    3.96   -5.66    5.34   -3.76    1.98    -.50    -.61    1.55
22.80   25.33  .0001  190   257    .04  -5.74    -.96    6.89   -8.34    4.98     .39   -4.23    4.82   -2.97     .77     .24    -.05
                                        -7.14    8.99   -5.48    -.92    5.99   -6.96    4.21    -.35   -2.09    2.31   -1.33     .62
23.00   24.79  .0008  188   258   -.04   7.91   -6.31    5.51   -5.57    4.79   -1.85   -2.32    5.24   -5.43    3.89   -2.75    2.81
                                        -6.99    1.06     .82   -2.58    5.34   -7.66    7.53   -4.73    1.33     .49    -.60     .65
23.20   24.66 -.0019  186   274    .07 -10.32     .78    8.60  -10.87    4.77    3.03   -5.60    3.76   -3.17    5.13   -5.59    2.84
                                        12.91    1.96   -1.07   -7.12   13.16  -11.71    6.16   -3.31    3.84   -3.19    -.13    2.20
23.40   24.00 -.0021  186   278    .11 -14.66     .74    9.97  -10.75    3.90    2.96   -4.88    3.23   -2.32    3.59   -4.69    3.68
                                        10.73    5.20   -1.79   -7.50   12.43  -10.31    5.35   -2.81    3.15   -3.24    1.28     .93
23.60   23.02 -.0012  185   278    .12 -16.99     .61   11.30  -11.71    4.36    2.39   -4.03    2.35   -1.48    2.82   -4.12    3.25
                                        -1.96   13.13   -6.60   -4.57   10.02   -8.00    3.44   -1.33    1.97   -2.35     .57    1.73
23.80   22.24 -.0010  165   284    .12 -15.86   -2.39   14.07  -12.42    3.55    3.37   -4.97    3.66   -2.95    3.97   -4.95    3.86
                                        -9.09   19.82  -11.85     .03    5.04   -3.26     .15     .38    1.30   -2.48    1.39     .73
24.00   21.50 -.0005  160   304    .14 -19.98    1.73   12.62  -12.98    5.27    -.81     .76    -.89     .03    2.01   -4.49    4.56
                                        -9.99   17.70   -8.73   -3.99    7.47   -3.24    -.50    1.68   -1.57     .83   -1.23    2.44
24.20   20.76 -.0002  148   304    .11 -17.17    1.25   13.88  -12.00    1.89     .63     .06    1.29    -.94    1.33   -3.51    1.84
                                       -13.00   21.94  -13.22   -1.29    3.31    1.06    -.99     .45    -.31   -1.97    1.60     .76
24.40   20.68 -.0023  145   313    .11  -8.97  -12.73   21.00  -13.89    4.25     .63   -1.38     .57    -.87    2.36   -2.33     .58
                                        -2.20   21.10  -13.60    5.06   -3.79    5.05   -4.93    2.56     .50   -1.31    -.33    1.06
24.60   20.10 -.0024  145   333    .07  -4.60  -15.84   23.80  -13.07    4.27     .82   -2.54    -.27    -.98    2.18    -.26    -.72
                                          .81   22.50  -14.46    7.10   -7.52    6.40   -6.61    3.08    1.70    -.67    -.71    1.31
24.80   19.13 -.0019  131   350    .13 -10.52  -13.72   20.13  -12.52    4.58     .22   -1.39     .37   -1.26    2.54   -1.33    -.58
                                        -7.81   21.95  -12.49    6.39   -6.18    6.89   -6.84    3.76     .06    -.30   -1.20    1.76
25.00   17.62  .0001    3   357    .46 -26.09  -24.74   19.65  -12.38     .93     .75   -2.36    -.22   -1.65    1.95   -3.00     .55
                                        12.02   17.08  -14.43    9.27   -7.72    6.42   -5.12    3.11    -.90    1.13   -1.73    3.03
25.20   16.90  .0004    3   365    .34 -23.14  -21.49   17.76  -11.20     .26    1.61   -2.52     .06   -2.78    2.49   -3.24    1.15
                                        10.95   15.75  -11.70    9.51   -6.76    8.45   -5.27    3.13     .20    1.48   -1.47    3.88
25.40   16.18 -.0003    3   365    .33 -18.03  -14.10   13.95  -10.12    4.75    -.09   -4.47    1.87   -3.28     .36   -4.06    -.27
                                        -6.75    5.53  -10.38    2.40   -4.82   10.34   -5.75    2.07     .88    3.21    -.25    4.48
25.60   15.43 -.0004    3   365    .14  -5.18   -7.84   10.10   -5.16    3.13   -2.02   -1.43    -.54   -2.99    -.02   -2.16    -.98
                                        -7.07    -.13   -7.03    4.30   -2.12    7.69   -2.14    3.35     .31    3.72     .81    3.53
25.80   14.50 -.0006    3   365    .00   2.41     .84    5.04   -1.47    1.13   -2.50    1.26    -.53    -.11    -.51    -.24   -1.15
                                        -8.40   -1.47   -2.57    4.22   -1.88    4.37   -2.18     .10     .01    2.35   -1.46    1.02
26.00   13.32 -.0004    3   365   -.04   4.37    -.38    -.43    3.11    -.48   -1.91    1.93    -.62     .31     .62    1.00   -1.07
                                        -2.10     .10   -2.70     .71     .04    2.07    -.83    -.77    -.14    2.61   -2.13    -.33
26.20   11.89 -.0002    3   365   -.02   2.70    2.44   -6.30    3.79    1.47    -.92     .99   -3.16     .25   -1.40    2.11     .26
                                         3.40     .53     .74   -4.37    2.52    1.25    2.29    1.35    -.44    3.01   -2.76    1.60
26.40   10.15 -.0004    3   365   -.02    .82    4.60   -4.95    3.41    2.09   -1.57    1.18   -1.30    1.53   -2.68    2.74     .38
                                         -.49   -4.06   -1.58   -2.33    3.08    1.11    1.29   -2.12    1.73    2.75   -2.38    1.77
26.60    7.95 -.0006    3   365    .09  -1.46    4.78    1.53   -1.85    1.07   -6.01    2.68    3.03    6.09   -2.36    -.20    -.29
                                        -3.72   -4.32   -5.96   -3.42    3.00     .36   -4.08   -2.21    1.27    4.09   -2.97    6.10
26.80    5.98 -.0002    3   365    .08  -1.52    3.12    6.34   -5.00     .26   -7.99    3.17    3.09    6.60   -3.71     .27   -3.78
                                         2.82    3.87   -3.78   -2.91     .65    -.32   -4.11    1.85    -.64    4.94   -1.68    7.02
27.00    4.76 -.0002    3   365    .04  -1.05    4.11    2.56   -2.55    -.18   -4.29    2.05     .30    3.58   -3.19    1.17   -3.42
                                         3.20    2.95     .23     .33     .78    -.99   -1.83    1.99    2.06    2.95   -1.03    1.99
27.20    3.99 -.0007    3   365    .05    .14    1.44    1.59    -.81    -.06   -1.35    1.82    -.34    1.55    -.81    1.05    -.73
                                        -5.07   -1.75   -3.42    -.61   -2.40     .37   -1.74    -.20     .93   -1.46    -.35    -.45
27.40    3.19 -.0003    3   365   -.01  -1.03    -.29     .83     .06   -1.02     .98    2.17    -.26    1.38     .91     .62    1.53
                                        -1.49     .78   -1.24    -.27   -1.33    -.17    -.45    -.02     .00    -.16     .83    1.52
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                                             OWS-V ISENTROPIC SUMMARY,1969
                                               PROPERTY =SALINITY
                                             FUNDAMENTAL PERIOD = 366 DAYS
LEVEL   F(1)      M  FIRST  LAST   A(0)                             FOURIER COEFFICIENTS X 100
                     OBS.   OBS.
SURF.   34.53  -.0000    3   365    .00   2.40  -4.54   5.56  -5.81   2.67   1.97  -4.12   3.88  -2.95   2.26  -1.80    .79
                                         14.44    .67  -2.69    .33   1.55  -1.67   1.63   -.88    .94   -.17   -.72    .67
22.60   34.06   .0008  209   246   -.01   2.71  -3.46   3.98  -3.77   2.73  -1.25   -.10    .96  -1.29   1.29  -1.14    .89
                                         -9.81   4.78  -2.13   -.04   1.67  -2.38   2.25  -1.58    .83   -.20   -.26    .66
22.80   34.39  0.0000  190   257    .02  -1.53  -1.19   2.87  -3.30   2.03   -.09  -1.45   1.80  -1.20    .34    .12   -.08
                                         -4.61   3.74  -2.07   -.29   2.17  -2.63   1.72   -.28   -.72    .91   -.55    .23
23.00   34.45   .0003  188   258   -.02   3.15  -2.51   2.19  -2.21   1.90   -.72   -.95   2.11  -2.17   1.56  -1.13   1.20
                                         -2.48    .27    .43  -1.11   2.20  -3.12   3.05  -1.92    .57    .14   -.17    .22
23.20   34.65  -.0008  186   274    .03  -4.39    .36   3.46  -4.31   1.83   1.23  -2.18   1.44  -1.22   1.99  -2.16   1.10
                                          4.95   1.02   -.53  -2.80   5.16  -4.53   2.34  -1.26   1.48  -1.22   -.06    .85
23.40   34.65  -.0008  186   278    .05  -6.17    .29   4.05  -4.25   1.53   1.10  -1.87   1.34  -1.01   1.43  -1.78   1.32
                                          3.71   2.50   -.89  -2.87   4.76  -3.95   2.11  -1.10   1.12  -1.09    .33    .52
23.60   34.54  -.0005  185   278    .05  -6.71    .25   4.41  -4.49   1.57    .97  -1.48    .83   -.58   1.06  -1.46   1.11
                                         -1.00   5.27  -2.63  -1.76   3.79  -2.91   1.18   -.47    .72   -.78    .12    .65
23.80   34.51  -.0004  165   284    .05  -6.32   -.81   5.29  -4.58   1.24   1.23  -1.74   1.30  -1.09   1.41  -1.71   1.33
                                         -3.67   7.64  -4.43   -.08   1.89  -1.16    .06    .10    .45   -.82    .45    .26
24.00   34.51  -.0003  160   304    .06  -8.10    .36   4.90  -4.64   1.89   -.41    .30   -.26   -.04    .74  -1.64   1.74
                                         -3.93   6.91  -3.05  -1.55   2.57  -1.11   -.15    .63   -.65    .36   -.43    .85
24.20   34.51  -.0001  148   304    .04  -6.18    .31   5.06  -4.27    .61    .25    .03    .49   -.36    .39  -1.16    .66
                                         -4.72   7.94  -4.69   -.52   1.21    .35   -.25    .03   -.05   -.73    .66    .25
24.40   34.74  -.0008  145   313    .04  -3.20  -4.50   7.34  -4.84   1.45    .26   -.43    .22   -.43    .78   -.72    .29
                                          -.89   7.38  -4.68   1.70  -1.25   1.76  -1.70    .79    .15   -.33   -.07    .33
24.60   34.77  -.0007  145   333    .03  -2.11  -4.89   7.83  -4.39   1.51    .11   -.69   -.07   -.40    .72   -.21   -.05
                                          -.37   7.63  -4.67   2.07  -2.29   2.07  -2.18   1.07    .37   -.14   -.14    .41
24.80   34.75  -.0007  131   350    .04  -3.03  -4.83   6.53  -4.19   1.19    .12   -.43    .17   -.36    .76   -.47   -.01
                                         -2.46   6.94  -4.31   2.07  -1.90   2.28  -2.02   1.16   -.01   -.07   -.30    .57
25.00   34.59   .0001    3   357    .14  -8.41  -7.85   6.13  -4.03    .22    .31   -.72   -.02   -.48    .63   -.85    .22
                                          3.84   5.06  -4.67   2.86  -2.35   2.05  -1.58    .92   -.23    .31   -.50    .88
25.20   34.55   .0001    3   365    .10  -6.94  -6.41   5.54  -3.47    .08    .55   -.69    .11   -.82    .76   -.94    .32
                                          2.79   4.39  -3.94   2.75  -2.07   2.57  -1.57    .88    .02    .39   -.48   1.10
25.40   34.59  -.0001    3   365    .10  -5.33  -4.12   4.19  -2.97   1.60    .08  -1.33    .61   -.84    .20  -1.21   -.19
                                         -2.53   1.39  -3.29    .51  -1.42   3.13  -1.77    .50    .22    .72   -.27   1.20
25.60   34.62  -.0001    3   365    .04  -1.50  -2.19   3.01  -1.50    .99   -.38   -.37   -.05   -.86    .01   -.63   -.29
                                         -1.93    .02  -1.99   1.21   -.59   2.23   -.72    .89    .05    .98    .16   1.07
25.80   34.61  -.0001    3   365   -.00    .69    .21   1.43   -.42    .34   -.55    .33   -.15   -.02   -.10   -.10   -.27
                                         -1.84   -.23   -.59   1.27   -.37   1.34   -.58    .13    .16    .68   -.52    .31
26.00   34.55  -.0001    3   365   -.01   1.11   -.13   -.21    .84   -.11   -.46    .59   -.09    .15    .10    .25   -.25
                                          -.14    .22   -.53    .28    .16    .54   -.20   -.13   -.01    .68   -.57   -.00
26.20   34.44  -.0000    3   365   -.00    .50    .57  -1.43    .95    .25   -.22    .39   -.64    .14   -.28    .52    .02
                                          1.13    .29    .31   -.89    .71    .34    .55    .27   -.09    .81   -.73    .44
26.40   34.30  -.0001    3   365    .00    .28   1.04  -1.08    .71    .38   -.40    .15   -.30    .23   -.50    .57    .11
                                          -.32   -.94   -.40   -.63    .56    .14    .23   -.47    .40    .54   -.56    .49
26.60   34.11  -.0001    3   365    .01   -.25    .82    .29   -.40    .33  -1.09    .44    .48   1.01   -.40    .01   -.07
                                          -.46   -.64  -1.10   -.61    .64    .11   -.65   -.41    .16    .66   -.48   1.08
26.80   34.01  0.0000    3   365    .01   -.23    .70   1.05  -1.07   -.21  -1.51    .65    .73   1.38   -.34    .07   -.69
                                          1.15   1.11   -.02   -.32    .28   -.27   -.87    .04   -.32    .81   -.03   1.24
27.00   34.09  -.0000    3   365    .00   -.11    .71    .46   -.24   -.08   -.60    .21    .10    .56   -.40    .10   -.54
                                           .38    .27    .09    .21    .16   -.19   -.27    .31    .37    .47   -.05    .37
27.20   34.23  -.0001    3   365    .01    .00    .19    .37   -.10   -.01   -.15    .25    .05    .25   -.15    .10   -.04
                                          -.48   -.12   -.41    .08   -.25    .14   -.22   -.02    .13   -.17    .01   -.04
27.40   34.39  -.0001    3   365    .00   -.02   -.01    .09   -.13   -.15    .16    .29   -.15    .15    .21    .10    .30
                                          -.32    .12   -.26   -.26   -.38   -.02   -.08   -.05    .02   -.06    .31    .24
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OWS-V ISENTROPIC SUMMARY,1969

PROPERTY = DEPTH(M.)

FUNDAMENTAL PERIOD = 366 DAYS

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LEVEL   F(1)       M FIRST  LAST    A(0)                          FOURIER COEFFICIENTS
                      OBS.  OBS.
SURF.  24.96   .0007     3   365    -.71     .79    -.08    -.08    -.00    -.05     .05     .03     .03     .01    -.02     .00    -.02
DENSITY                                     1.13    -.26     .10    -.00     .10    -.13     .08    -.04     .05     .06    -.01    -.04
22.60   8.00   .0110   209   246    -.40     .72    -.54     .34    -.19     .11    -.04    -.04     .13    -.19     .18    -.09    -.02
                                           -1.01     .21     .06    -.13     .15    -.17     .18    -.14     .04     .08    -.16     .16
22.80   5.00   .0110   190   257     .68    -.73    -.60    1.45   -1.23     .40     .15    -.11    -.12     .04     .28    -.32    -.14
                                           -2.49    2.04    -.90    -.28     .70    -.38    -.01    -.01     .24    -.16    -.27     .53
23.00   2.00   .0274   188   258     .20    -.16    -.39     .73    -.67     .49    -.52     .73    -.75     .35     .26    -.56     .29
                                           -3.70    2.21   -1.34     .73    -.51     .50    -.31    -.16     .56    -.49    -.05     .59
23.20   1.00   .0521   186   274    -.93    1.42    -.80     .65    -.74     .59    -.47     .86   -1.26     .73     .47   -1.05     .52
                                           -5.32    2.29   -1.56    1.06    -.65     .69    -.69    -.02     .97   -1.00     .00     .84
23.40   6.00   .0685   186   278   -2.68    3.21    -.14     .19   -1.91    1.71    -.13    -.03    -.90     .68     .50    -.75    -.01
                                           -4.81    1.58   -2.54    1.78     .27    -.53    -.51     .37     .72    -.70    -.36     .80
23.60   4.00   .0164   185   278    4.30   -4.66   -1.66    2.92    -.76     .37   -1.34     .92     .00     .14    -.17    -.55     .45
                                           -8.21    6.50   -1.81     .31   -1.24     .82     .35    -.19    -.22    -.19     .06     .88
23.80  11.00   .0685   165   284   -2.29    3.39   -1.67    1.49   -2.03    1.53    -.43     .20    -.48     .04     .81    -.87     .21
                                           -6.56    3.19   -3.08    2.30    -.97     .63    -.84     .34     .52    -.46    -.28     .58
24.00  17.00   .0384   160   304    -.02     .87   -2.35    2.58   -1.61     .98    -.81     .23     .21    -.12     .57   -1.32     .75
                                           -6.39    4.38   -2.57    1.64   -1.50     .98    -.29     .14     .25    -.90     .44     .59
24.20  25.00   .0411   148   304   -2.47    3.84   -2.76    2.92   -2.10     .40     .11    -.10     .48    -.36     .26    -.79     .35
                                           -4.93    4.18   -3.97    2.49   -1.77    1.50    -.32    -.64    1.00   -1.48    1.03     .46
24.40  13.00   .0438   145   313    4.20   -2.96   -2.59    1.46   -1.63    2.01    -.53    1.19   -1.11    -.54     .32    -.93    1.74
                                          -11.65    6.02   -2.57    2.76   -1.15    1.09   -1.70     .07    -.05     .47     .35     .99
24.60  18.00   .0849   145   333    -.72     .40     .01    1.41   -2.26    1.63    -.79    1.33   -1.62     .04     .86    -.63     .96
                                           -9.26    5.73   -4.68    2.83   -1.39    1.43   -1.59     .10     .84    -.03    -.19     .26
24.80   7.00   .2027   131   350   -9.26    -.47    6.45    2.96   -1.69    3.41   -1.16    3.19   -2.25    -.58     .44   -1.80     .81
                                           -6.01    8.76   -4.12    1.41   -1.37    1.72   -3.44    -.47    -.08    -.56     .33     .54
25.00  57.00   .1205     3   357  -27.73    5.15    4.99    5.35   -1.96    3.28     .19    5.52   -2.68     .69    1.01   -2.21    1.73
                                           -5.78   11.68   -8.25    2.53   -1.04    1.97   -4.17    -.93   -1.23   -1.11     .24    -.22
25.20  87.00  -.1507     3   365   -7.18   -7.05   14.90   11.88   -5.25    8.36    -.12    4.78   -2.80   -1.16   -1.54   -3.82    -.74
                                          -57.26   -4.72  -17.19   -7.06   -4.52    2.36   -7.53    -.73    -.17   -1.69     .20    1.70
25.40 100.00  -.0301     3   365   -5.44   -7.49   16.06   26.02  -18.01    8.21   -2.44   -6.42   -2.75    3.54    2.73   -3.10     .10
                                          -35.57   30.53  -10.38    1.02    5.62    8.51  -10.58   -8.70    -.71   -1.04   -1.11    7.25
25.60 108.00   .0932     3   365   17.04  -25.40   -5.99   40.20  -38.66   13.25   10.79   -7.18    1.60   -3.85     .89   -4.59     .55
                                           10.12   54.37  -13.17    4.47   -1.56   11.59   -7.29    -.65    4.79   -4.08   -3.20    7.22
25.80 124.00   .1205     3   365   41.90  -37.62  -22.50   50.54  -40.85   13.28    6.55   -8.04    2.19   -4.59   -1.21   -9.25    3.44
                                           30.41   54.53  -21.12   10.07     .12   15.22   -9.78    -.01    7.16   -1.37   -4.86    5.31
26.00 163.00   .1507     3   365   49.10  -43.56  -26.31   56.06  -46.12   13.79    5.64   -6.26    3.04   -5.93   -2.09   -8.44    2.85
                                           31.19   54.59  -20.54   14.77     .65   15.76  -11.28    4.54    3.90    -.39   -3.98    7.20
26.20 235.00   .1589     3   365   43.80  -47.65  -34.71   63.71  -43.10    5.62    9.78   -5.29    5.40   -7.53    1.54   -5.70     .66
                                           26.68   50.83  -24.92   21.58    2.63   10.06   -9.70    7.66   -1.52    -.08     .14    1.97
26.40 315.00   .1616     3   365   36.56  -48.20  -37.31   60.51  -39.16    3.23   10.59   -5.20    6.36   -5.90    3.51   -2.74   -1.47
                                           26.26   51.33  -25.35   16.90    6.10    7.29   -8.33    8.00   -1.14    2.69    1.03    1.31
26.60 402.00   .1562     3   365   29.18  -48.20  -34.29   56.00  -37.79    1.91   14.76   -3.94    8.69   -5.61    4.31   -2.44   -2.62
                                           27.06   55.00  -21.23   13.13    6.85    5.05   -6.22    6.26     .64    4.15    2.07     .93
26.80 497.00   .1507     3   365   27.45  -46.16  -34.88   55.49  -34.84     .98   15.98   -4.10    6.98   -5.79    4.20   -3.77   -2.15
                                           26.09   52.54  -19.68   11.13    9.54    4.92   -3.08    2.69    2.99     .81    1.43   -1.66
27.00 609.00   .1945     3   365   24.65  -42.43  -34.36   53.64  -33.25    1.18   14.04   -3.48    5.42   -4.90    4.07   -4.65   -1.62
                                           29.66   52.37  -16.23    9.29    9.17    7.61   -1.82    1.23    4.66     .91    2.52   -2.19
27.20 773.00   .1890     3   365   25.55  -41.72  -26.22   49.32  -35.07    1.01   12.68    -.54    5.01   -1.80    2.25   -3.11     .11
                                           28.18   51.38  -11.32    5.49    8.42    3.68   -5.03    1.36    4.41    3.65    2.09   -3.78
27.401042.00   .1233     3   365   30.19  -40.76  -22.83   44.07  -40.51    2.40   15.44   -4.32    3.63   -1.29     .36    -.08    -.11
                                           17.71   51.91  -11.62     .93    8.70    -.16   -4.43   -2.43    7.50    2.26     .85   -1.25
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                                                 OWS-V ISENTROPIC SUMMARY,1970
                                                   PROPERTY = TEMP.(C)
                                                 FUNDAMENTAL PERIOD = 366 DAYS

LEVEL     F(1)        M FIRST   LAST   A(0)                                 FOURIER COEFFICIENTS X 100
                         OBS.   OBS.
SURF.    16.69    .0025    1    365   2.45  -244.83    -1.48    31.47   -39.63     7.29    -4.54    12.81     8.55    -8.96     -.94    13.49    -5.37
                                            -498.19    49.46   -15.16    40.11   -15.47    -4.19    -2.32    23.73   -22.31    19.05    -8.32     4.28
22.40    26.34    .0011  235    237   -.06    10.16    -6.37     1.94     1.36    -2.53     1.74     -.06    -1.23     1.42     -.62     -.45     1.04
                                              -8.15    -1.37     3.90    -2.96      .65     1.31    -1.86     1.07      .26    -1.14     1.10     -.30
22.60    26.04   -.0007  218    260    .05    -6.79     2.09     1.22    -1.07    -1.10     2.25     -.96    -1.45     2.59    -1.55     -.48     1.73
                                               3.05     2.27    -1.25    -1.20     1.59      .35    -2.33     2.18     -.10    -1.90     2.17     -.88
22.80    24.39    .0025  195    260   -.05     9.45   -10.35     9.80    -7.24     4.00    -1.98     1.80    -2.31     1.93     -.17    -2.00     3.23
                                             -28.35    12.05    -4.13     -.57     2.28    -1.72     1.00    -1.44     2.89    -3.84     3.29    -1.42
23.00    24.26    .0015  195    271   -.05     9.81    -7.64     4.82    -2.28      .68     -.19      .63    -1.40     1.48     -.11    -2.23     3.78
                                             -14.13     2.98     1.01    -2.05     1.67     -.78      .28     -.68     2.05    -3.35     3.18    -1.16
23.20    23.30    .0024  192    271   -.06    11.53    -8.62     5.20    -2.72     1.82    -2.06     2.67    -3.13     2.97    -1.65     -.56     2.14
                                             -23.90     7.34    -2.04      .92    -1.15     1.36     -.92     -.07     1.61    -3.01     3.15    -1.54
23.40    23.08    .0014  190    284   -.06    10.90    -6.71     2.70     -.35     -.27     -.41     1.69    -2.48     1.97     -.29    -1.58     2.49
                                             -11.31      .48     1.99    -1.41      .11      .86     -.72     -.59     2.29    -3.18     2.66    -1.00
23.60    22.80   -.0005  189    307    .07     -.65   -10.94      .08     5.65     1.14     -.45    -1.95    -3.50     3.28     3.29    -3.07      .79
                                              -7.03    -2.43    10.41    -1.02    -1.64    -2.76     -.70     1.44     5.22    -4.91      .05     -.92
23.80    20.77    .0033  184    310    .07      .02   -11.92     -.02     5.26     2.22    -1.47     -.13    -5.32     4.06     2.30    -1.80     -.10
                                             -51.67    19.37    -4.21    11.06   -11.15     5.38    -7.71     6.55      .71     -.18    -3.91     2.91
24.00    20.16    .0035  183    318    .02     2.46    -9.28      .16     6.16      .67    -2.24      .32    -5.45     4.10     2.79    -1.62      .04
                                             -47.57    18.65    -4.86     9.99   -12.40     6.59    -7.49     6.56     1.11     -.10    -4.16     2.63
24.20    20.52    .0004  175    334    .06      .21   -11.73     1.19     5.62     2.98    -3.66     1.40    -6.95     5.24      .78     -.46     -.20
                                             -16.86     3.67     6.47     3.29    -7.03     1.19    -3.85     3.28     3.58    -2.28    -1.21     1.44
24.40    19.93    .0003  175    334    .04     -.96    -9.05      .84     7.27     2.28    -3.06      .08    -5.89     4.13      .67    -1.25      .89
                                             -12.34     3.63     6.80     2.65    -7.40      .35    -3.50     3.05     3.26    -2.25     -.13     1.72
24.60    19.51    .0002  164    358   -.04     1.92    -5.11     3.60     7.52     2.80    -3.58     -.60    -6.33     3.64     -.18    -1.20     1.11
                                               1.79     1.76     7.99     -.56    -6.79    -1.89    -2.99     2.61     3.15    -1.51      .20     3.00
24.80    19.13   -.0027  149    365    .28    -2.52   -14.03    -1.09     -.34    -1.05    -7.41    -3.40    -4.62     3.57      .43    -2.14     1.92
                                             -11.86   -11.21     3.52    -1.87    -6.79      .49     -.37     6.06     3.07    -1.09     1.21     3.52
25.00    18.74   -.0027  144    365    .11     5.58   -14.89     3.01    -1.30      .03    -6.08    -3.37    -2.52     4.11      .07    -1.37      .74
                                               5.93   -10.15     3.85      .62    -7.28     2.12      .09     5.64     3.24    -2.76     1.83     2.91
25.20    16.89    .0002    3    365    .41   -18.65    -9.96     -.35    -1.40     -.74    -8.02    -2.25    -3.97     4.32    -1.17    -1.99      .62
                                               3.59   -12.77     3.33    -3.42    -6.31      .20      .55     4.65     2.36    -2.75     1.60     3.45
25.40    16.06    .0004    1    365    .45   -14.75   -13.00    -2.77     3.51    -5.45    -8.11     -.18    -5.73     3.31    -1.10    -4.43      .71
                                              10.86    -8.73    -2.81    -3.99    -3.56    -3.95     2.48     4.37     -.21    -2.10     3.29     2.95
25.60    15.29    .0002    1    365    .27   -14.21    -3.74      .36     4.49    -3.61    -3.08     1.77    -2.11     1.40    -1.33    -4.70    -1.86
                                              -1.85   -12.48    -3.02    -4.43    -1.85    -1.37     2.71     2.82     -.80    -2.23     2.92     2.28
25.80    14.28    .0004    1    365    .19    -9.71    -2.26    -2.95     1.33     -.72      .31     2.35     -.01     -.28    -1.06    -2.05    -1.81
                                               1.37    -3.52    -2.85    -4.92     -.79     -.36      .36     1.30      .36     -.57      .94      .31
26.00    13.17    .0004    1    365    .09    -7.45    -2.09    -2.35     2.02     1.28     1.36    -1.63     -.06      .03      .07    -3.02     -.53
                                              -4.29    -2.08    -3.60    -3.53     1.09     1.28     1.67    -2.52     -.52      .85     1.15    -1.82
26.20    11.90    .0001    1    365    .01      .94     -.92    -4.38      .85      .03     -.02    -1.21     -.41      .51     -.28    -1.28     1.32
                                              -6.55      .61    -1.33    -2.00    -1.09    -1.49      .60      .06     1.14      .38     -.48      .66
26.40    10.00    .0003    1    365    .02     4.12    -1.61    -3.13      .16    -1.08     1.33     1.58      .68    -1.57     -.92     -.71      .91
                                              -4.77     3.03      .06      .04      .78    -4.55      .64     1.68     2.84     -.21    -1.99      .28
26.60     7.72    .0001    1    365    .16     2.34    -1.00    -2.71    -3.50    -3.20     3.02     3.76    -1.98    -4.35     -.15     -.46    -1.77
                                              -4.14      .81     2.68    -1.03    -2.69    -1.65     4.50     2.21      .13    -1.92     -.52     1.52
26.80     5.90   -.0004    1    365    .07     -.30    -1.32    -1.34     -.94    -1.66     3.58     3.43    -2.95    -2.06     1.16     -.88    -2.60
                                              -8.85    -3.96     5.98    -1.86    -5.00     1.45     4.83     1.83    -1.49    -2.75      .64     1.57
27.00     4.69    .0001    1    365   -.01     2.19      .97      .55     1.43      .79     -.17      .92    -1.18    -2.52    -1.18    -1.60     -.69
                                               2.28      .10      .36    -3.67    -1.80     3.26     2.22    -1.32    -2.18    -1.68     -.27     -.30
27.20     3.72    .0005    1    365    .07      .82    -1.09    -1.21     -.19    -2.32    -1.91     1.06     1.38     -.08     -.51     -.16     -.54
                                               7.66     3.51     2.50      .58     1.18     2.10      .78    -1.14     -.87      .47      .89      .37
27.40     3.07   -.0001    1    365    .04     1.86     -.15     -.93      .31      .29    -1.28      .66     -.26      .38     -.93    -1.36    -1.26
                                              -1.80     -.42     -.16    -2.23     -.01     -.26     1.74     -.60     -.79      .06      .48      .64
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                                                         OWS-V ISENTROPIC SUMMARY.1970
                                                           PROPERTY =SALINITY
                                                         FUNDAMENTAL PERIOD = 366 DAYS
LEVEL    F(1)       M  FIRST  LAST   A(0)                                FOURIER COEFFICIENTS X 100
                       OBS.   OBS.
SURF.   34.52  -.0000     1   365    .02    2.20   -5.81    5.58   -4.84    2.61   -3.15     .59   -1.35    2.34     .99    -.58    -.33
                                           12.54   -8.40    7.86    -.96    2.14   -4.39    1.54    1.39    1.30   -2.41    1.78   -1.19
22.40   34.27   .0005   235   237   -.02    4.21   -2.64     .81     .56   -1.05     .72    -.03    -.51     .59    -.26    -.19     .43
                                           -3.38    -.57    1.62   -1.23     .27     .54    -.77     .44     .11    -.47     .45    -.12
22.60   34.41  -.0003   218   260    .02   -2.81     .77     .65    -.53    -.48    1.03    -.48    -.58    1.11    -.69    -.18     .72
                                            1.08    1.06    -.52    -.60     .78     .10   -1.01     .98    -.09    -.79     .93    -.39
22.80   34.00   .0010   195   260   -.02    3.58   -4.16    4.11   -3.10    1.71    -.81     .73    -.99     .88    -.16    -.76    1.29
                                          -11.75    5.20   -1.89    -.18     .97    -.72     .37    -.53    1.15   -1.59    1.41    -.65
23.00   34.21   .0006   195   271   -.02    3.77   -3.11    2.13   -1.11     .40    -.16     .34    -.62     .59    -.01    -.88    1.43
                                           -6.18    1.61     .16    -.75     .67    -.32     .13    -.33     .88   -1.34    1.22    -.44
23.20   34.12   .0010   192   271   -.03    4.68   -3.41    2.02   -1.08     .76    -.82     .99   -1.16    1.15    -.69    -.16     .80
                                           -9.40    2.81    -.79     .38    -.43     .46    -.31    -.01     .57   -1.13    1.24    -.64
23.40   34.30   .0005   190   284   -.02    4.17   -2.61     .99    -.05    -.06    -.29     .70    -.91     .76    -.15    -.64    1.02
                                           -4.41     .18     .80    -.47    -.09     .35    -.19    -.26     .85   -1.25    1.07    -.35
23.60   34.46  -.0002   189   307    .03    -.50   -4.27     .06    2.22     .47    -.25    -.73   -1.32    1.26    1.22   -1.21     .42
                                           -2.83    -.82    4.04    -.36    -.71   -1.06    -.22     .53    1.98   -1.91     .10    -.33
23.80   33.98   .0012   184   310    .02     .20   -4.26    -.00    1.94     .71    -.54     .01   -1.98    1.54     .85    -.74     .04
                                          -18.69    6.99   -1.55    3.96   -4.09    2.05   -2.83    2.39     .30    -.17   -1.39    1.07
24.00   34.03   .0012   183   318    .01     .75   -3.39    -.10    2.15     .37    -.69     .00   -1.95    1.60     .94    -.74     .11
                                          -17.14    6.58   -1.72    3.73   -4.34    2.24   -2.74    2.47     .35    -.19   -1.42    1.05
24.20   34.42   .0001   175   334    .02    -.01   -4.11     .34    1.86    1.08   -1.17     .52   -2.48    1.80     .28    -.18    -.06
                                           -6.13    1.35    2.14    1.27   -2.38     .45   -1.47    1.14    1.24    -.76    -.44     .54
24.40   34.48   .0001   175   334    .02    -.55   -3.24     .31    2.28     .88    -.90     .09   -2.08    1.32     .22    -.44     .37
                                           -4.52    1.34    2.26     .98   -2.32     .09   -1.30     .94    1.14    -.72    -.01     .63
24.60   34.60   .0001   164   358   -.01     .68   -1.81    1.33    2.41     .93   -1.23    -.13   -2.04    1.18    -.17    -.48     .51
                                             .50     .67    2.61    -.20   -2.28    -.53   -1.00     .86     .92    -.50     .20    1.06
24.80   34.73  -.0009   149   365    .10    -.74   -4.64    -.29    -.33    -.47   -2.43   -1.14   -1.57     .98     .03    -.71     .69
                                           -4.33   -3.78     .88    -.76   -2.21     .18    -.19    1.89     .99    -.25     .55    1.17
25.00   34.87  -.0009   144   365    .04    1.92   -4.92    1.13    -.49    -.10   -1.91   -1.20    -.85    1.21    -.06    -.46     .15
                                            1.66   -3.37     .94     .12   -2.52     .66    -.10    1.73    1.04    -.89     .61    1.00
25.20   34.53   .0001     3   365    .13   -5.86   -3.08    -.07    -.53    -.26   -2.38    -.83   -1.23    1.29    -.37    -.69     .12
                                            1.17   -4.00     .98   -1.14   -1.87    -.02     .11    1.45     .75    -.89     .51    1.13
25.40   34.54   .0001     1   365    .14   -4.29   -3.89    -.70    1.04   -1.69   -2.36     .03   -1.71    1.04    -.41   -1.38     .13
                                            4.02   -2.25    -.69   -1.06    -.97   -1.02     .83    1.27    -.05    -.62     .93    1.05
25.60   34.58   .0001     1   365    .08   -3.93   -1.13    -.12    1.10   -1.10   -1.06     .61    -.58     .43    -.32   -1.26    -.50
                                            -.11   -3.17    -.75   -1.22    -.52    -.43     .71     .76    -.39    -.73     .83     .62
25.80   34.56   .0001     1   365    .05   -2.61    -.73    -.92     .45    -.14     .19     .67     .15     .03    -.22    -.54    -.48
                                             .36    -.89    -.81   -1.43    -.35    -.22     .10     .37     .00    -.23     .29     .01
26.00   34.52   .0001     1   365    .02   -1.89    -.55    -.71     .51     .39     .33    -.52    -.07     .17     .02    -.74    -.08
                                           -1.18    -.55   -1.00   -1.08     .15     .34     .44    -.69    -.18     .24     .33    -.44
26.20   34.43   .0000     1   365    .00     .34    -.18   -1.15     .24    -.11    -.13    -.33     .14     .24     .14    -.39     .01
                                           -2.08    -.23    -.68    -.70     .04    -.12     .31    -.28     .00     .09    -.15    -.05
26.40   34.26   .0001     1   365    .01     .82    -.22    -.72    -.05    -.34     .34     .44     .10    -.42    -.20    -.16     .24
                                            -.74     .79     .05     .08     .26    -.93     .00     .31     .61     .07    -.37     .05
26.60   34.07   .0000     1   365    .03     .44    -.05    -.59    -.56    -.55     .57     .77    -.42    -.83    -.07    -.22    -.23
                                            -.66     .23     .27    -.32    -.57    -.22     .76     .29     .00    -.24    -.18     .30
26.80   34.01  -.0001     1   365    .01    -.05    -.31    -.40    -.15    -.30     .75     .66    -.42    -.45     .17    -.18    -.36
                                           -1.61    -.73     .90    -.35    -.81     .29     .80     .29    -.33    -.58    -.01     .23
27.00   34.08  0.0000     1   365   -.00     .55     .15     .20     .43     .26    -.00     .15    -.19    -.62    -.26    -.15    -.02
                                             .23     .09     .32    -.50    -.32     .55     .40    -.05    -.33    -.19     .03    -.13
27.20   34.20   .0001     1   365    .01     .07    -.14    -.13    -.01    -.31    -.37     .13     .16    -.02    -.10    -.02     .03
                                             .95     .44     .17    -.03     .09     .18     .05    -.12    -.09     .10     .13     .04
27.40   34.37  0.0000     1   365    .01     .23    -.01    -.11     .13    -.09    -.14     .08    -.22    -.03     .18    -.30    -.01
                                            -.09     .14     .20    -.26     .23    -.17     .19     .10     .01     .10     .16    -.15
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                                                    OWS-V ISENTROPIC SUMMARY,1970

                                                      PROPERTY = DEPTH(M.)

                                                    FUNDAMENTAL PERIOD = 366 DAYS

LEVEL      F(1)       MFIRST  LAST    A(0)                                       FOURIER COEFFICIENTS
                       OBS.   OBS.
SURF.     25.22  -.0006    1   365    -.56     .68    -.19    -.10     .25     .08    -.16    -.14     .08     .18    -.06    -.18     .05
DENSITY                                       1.20    -.29     .30    -.03    -.11    -.13     .15     .08    -.02    -.21     .09     .12
22.40      8.00  -.0164  235   237     .86   -1.49     .93    -.28    -.20     .37    -.25     .01     .18    -.21     .09     .07    -.15
                                              1.19     .20    -.57     .43    -.10    -.19     .27    -.16    -.04     .17    -.16     .04
22.60      1.00   .0027  218   260     .62    -.66    -.55    1.31   -1.02     .06     .69    -.73     .27     .15    -.23     .11    -.06
                                             -1.40    1.36    -.41    -.70    1.09    -.61    -.14     .50    -.37     .09     .03     .00
22.80      2.00   .0329  195   260   -1.14    2.06   -1.63    1.14    -.70     .28     .13    -.45     .51    -.29    -.03     .22    -.19
                                             -3.12     .75     .12    -.49     .66    -.62     .36     .04    -.34     .37    -.18    -.02
23.00      6.00   .0219  195   271    -.35    1.08   -1.68    1.55    -.73     .04     .12    -.26     .71    -.97     .45     .42    -.65
                                             -2.86    1.12     .26    -.92     .80    -.55     .60    -.48    -.19     .87    -.75    -.03
23.20      3.00   .0411  192   271    -.78    1.80   -2.12    1.78    -.97     .40    -.13    -.27     .76    -.69    -.07     .67    -.50
                                             -4.77    1.80    -.16    -.54     .58    -.58     .62    -.21    -.56     .90    -.40    -.22
23.40     11.00   .0959  190   284   -6.94    9.39   -1.74    -.92    -.95    1.59     .21   -1.14     .37     .04     .35    -.19    -.39
                                             -3.13   -2.73     .10     .99     .94   -1.71     .39     .40     .04    -.07    -.41     .23
23.60     10.00   .0877  189   307   -5.37    6.81   -1.62     .61    -.60     .73    -.90    -.63     .92     .82    -.21    -.91    -.58
                                             -4.13    -.30    -.29     .15    -.16    -.75    1.11     .69    -.60    -.90    -.22     .87
23.80      1.00   .1096  184   310   -3.49    6.45   -3.36    -.43    -.45    2.34    -.28    -.93    -.75     .60     .45     .31    -.41
                                             -9.82     .95    -.56    2.58    -.62   -1.18    -.66    1.10     .37     .17    -.71    -.06
24.00      2.00   .0712  183   318    2.62    2.90   -5.93   -1.97    -.44    3.27     .75    -.28   -1.01     .01    -.17    -.09    -.01
                                            -14.19    1.07     .44    4.35     .02   -1.09   -1.54     .32     .03     .29    -.10     .57
24.20     10.00   .1123  175   334   -4.90    7.80   -3.08    -.49    -.85    2.62    -.40    -.53    -.96     .68     .02     .02    -.19
                                             -8.29     .04    -.60    2.56    -.37   -1.21    -.65     .80     .32    -.05    -.28     .42
24.40     14.00   .0247  175   334    8.45    3.41   -7.81   -4.76   -3.93    1.63     .28    1.42    1.47    2.00     .06    -.98   -1.26
                                            -17.29   -3.48    -.73    4.43    2.56    1.25     .97     .59   -1.24   -1.74   -1.40     .36
24.60     18.00   .0603  164   358    2.80    6.45   -6.26   -3.20   -3.60    1.75     .06     .75    1.71    1.35     .34   -1.83    -.57
                                            -13.84   -2.70   -1.47    4.11    1.42    1.23     .43    1.08   -1.65   -1.47   -1.19     .68
24.80      6.00   .0219  149   365   17.69    1.93   -6.73   -7.44   -4.68   -1.96    -.92   -1.71    1.12    1.23     .97   -1.10     .45
                                            -27.94   -5.21   -4.68    2.75    1.65     .97    2.26    1.98     .89   -1.09     .24     .75
25.00     12.00   .1616  144   365   -4.43    7.09   -1.30   -3.69    -.88     .77    -.64   -1.77     .62    2.19     .93   -1.55     .76
                                            -12.62    -.57   -1.01    2.25    1.28   -1.21    1.95    2.40     .95   -1.45     .41    1.79
25.20     73.00   .0137    3   365  -17.44   20.70    -.63   -1.86     .94    1.87    -.27   -2.26     .40    3.33     .79   -1.62     .03
                                            -13.90    -.92   -1.84    2.05    -.38   -3.07    1.38    2.01     .53   -2.68    -.99    1.45
25.40     89.00   .0548    1   365  -36.70   19.54    2.18   -3.25    3.80    4.88   -3.27   -1.92     .80    4.97    3.20   -2.09    1.54
                                            -21.49     .19    1.82     .71    -.76   -4.43    1.58    5.68     .33   -3.30     .21    1.26
25.60    142.00  -.0521    1   365  -62.13   10.07   12.42   12.16   12.12   14.70    2.72   -3.56    1.61   10.27   -1.13   -8.13    1.34
                                            -55.52  -23.36    3.85    3.79   -4.70     .15   11.24   11.69    6.99    -.13    2.68    6.12
25.80    168.00  -.0630    1   365  -35.65   32.71    4.09   -1.60    1.83     .82   -7.73   -7.35    3.51   16.05   -1.46   -6.98    1.45
                                            -25.94    -.35   15.22    6.31   -8.36   -7.50    3.37    8.06    4.43   -4.17    3.29   11.74
26.00    218.00  -.0356    1   365  -21.69   14.20   11.00   10.98   -7.02  -13.64  -10.64    4.59    3.06   12.62   -6.71   -4.47    8.07
                                            -16.52  -12.32   24.97   15.87  -15.97  -17.10    -.79   17.02    8.28  -10.07   -1.91   13.36
26.20    293.00  -.0082    1   365   -4.31   -1.80    5.41    4.96   -3.60   -7.34  -11.69     .24     .10   17.73   -4.53   -5.68    7.07
                                             -4.20  -10.23   18.28   11.35  -12.62   -9.43   -4.04    5.78    3.75   -4.34     .65    8.15
26.40    374.00  -.0247    1   365    3.61   -6.12     .69   -3.17   -1.80    -.74  -12.66   -4.60   -1.60   19.71   -2.89   -6.91    5.70
                                             -2.20   -5.94   11.68    4.17  -12.53   -2.62   -3.77   -1.27    1.03   -2.91    1.96    5.94
26.60    459.00   .0274    1   365   -4.59   -9.76     .29    1.77   -1.60   -1.50  -12.65   -1.67     .41   18.43   -4.83   -7.24    8.44
                                             -7.46   -2.04    9.70    5.59   -8.74   -4.63   -7.40   -1.03    6.88   -2.28   -1.31    2.62
26.80    552.00   .0849    1   365   -5.68   -8.72    2.60    3.61   -3.42   -1.43  -10.46   -5.17    1.27   18.49   -4.17   -4.78    9.88
                                             -6.58    2.49   11.91    9.52   -7.74   -3.42   -4.16   -1.30    6.12    -.72   -1.30    4.07
27.00    680.00   .0301    1   365   -1.80  -11.90    2.68    3.54    -.96    -.30  -11.00   -8.43    1.73   17.19   -4.73   -9.86    7.81
                                            -15.70   -1.30    6.67    8.17   -9.26   -1.83   -4.51     .30    9.32    2.41   -1.40    3.51
27.20    842.00   .0685    1   365   -4.90  -11.12    3.84    4.37   -1.90    3.19  -10.79   -7.97    -.54   16.03   -2.49   -6.41    5.92
                                            -18.15    1.73   11.73   10.39  -11.79   -6.54   -2.00    2.45    7.15   -5.88   -3.38    3.52
27.40   1087.00   .2137    1   365   -3.51   -4.36   18.96    2.20  -20.68  -18.49  -14.11   -6.00    5.95   20.75   12.61   11.50   13.54
                                              4.60   17.41   27.69   21.98   -4.82   -3.22   -7.10   -7.82   -1.87   -3.70   -1.67   11.14
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                               OWS-V ISENTROPIC SUMMARY,1971
                                 PROPERTY = TEMP.(C)
                               FUNDAMENTAL PERIOD = 366 DAYS

LEVEL    F(1)      M FIRST  LAST   A(0)                                    FOURIER COEFFICIENTS X 100
                     OBS.   OBS.
SURF.   17.60 -.0013    4   364   3.10-191.51  -42.18   11.73  -19.39   21.28  -35.32   16.13    8.79  -38.43     .45   -1.02   -1.18
                                      -452.27   25.34  -58.72  -24.15   17.42    3.12    2.80    7.22  -19.15  -22.21   -6.20    7.64
22.40   26.49  .0001  228   236   -.00    .29    -.35     .35    -.24     .02     .20    -.30     .21     .01    -.22     .29    -.17
                                         -.63     .24     .02    -.22     .31    -.22     .01     .21    -.29     .19     .03    -.23
22.60   25.73  .0005  224   236   -.02   3.38   -2.73    1.75    -.62    -.37     .97   -1.01     .57     .10    -.64     .78    -.48
                                        -4.27     .65     .86   -1.39    1.24    -.60    -.18     .76    -.88     .53     .07    -.56
22.80   25.26  .0004  214   268   -.03   5.11   -1.32   -1.79    2.40    -.95    -.70    1.04    -.09    -.79     .34    1.18   -2.01
                                         -.17   -3.24    2.28     .20   -1.69    1.30     .04    -.72     .05    1.12   -1.12    -.52
23.00   24.60  .0002  207   268   -.02   3.19   -1.49    -.50    1.68   -1.39     .15     .64    -.21    -.63     .41     .98   -1.86
                                         -.59   -1.82    2.02    -.78    -.72    1.19    -.42    -.39     .06    1.01   -1.17    -.31
23.20   23.99  .0004  206   286   -.04   5.87   -2.19   -1.83    2.82    -.84    -.41    -.34     .72     .13    -.57     .49   -1.00
                                         -.59   -3.79    3.21    -.03   -1.51     .45     .25     .59    -.99     .45    -.30     .14
23.40   23.13  .0012  205   291   -.07  10.37   -3.69    -.24     .07     .85    -.32    -.42     .14     .25     .01    -.08    -.46
                                        -6.13   -2.14    1.30     .42     .00    -.77     .37     .22     .03    -.25    -.07    -.01
23.60   22.44  .0019  185   316   -.14  15.67     .06     .53   -1.50    -.83    -.81     .95     .43     .93    -.83    -.01   -1.41
                                        -3.43   -2.20   -2.09    -.53    -.10    1.34     .55     .22    -.80    -.61    -.11     .12
23.80   21.84  .0033  184   321   -.36  27.96   10.97    4.89   -1.43   -5.67   -3.22    -.35    1.13    2.61     .87     .47   -2.35
                                        12.24   -2.53   -6.96   -6.41   -2.49    3.19    2.15    2.79    -.34    -.78   -2.12    -.34
24.00   20.65  .0039  172   325   -.24  18.37    8.54    1.11     .33   -5.89     .31   -1.02    1.78     .96     .48    -.76   -1.11
                                       -10.44    6.35  -10.40     .05   -4.33    5.75   -1.79    3.86   -2.64     .70   -2.13    1.52
24.20   20.28  .0017  156   331   -.05  12.48    -.42   -1.77   -5.72   -5.47     .34    2.49    1.84    3.08     .70     .06   -1.63
                                       -14.16   -1.24   -8.35    1.09     .12    8.81   -1.52    4.31   -3.55     .51   -3.99    1.16
24.40   20.08  .0005  153   331   -.11  20.80   -4.32    2.63   -8.99   -4.78     .72    1.23    2.37     .84    1.43    -.05    -.11
                                         1.39   -6.32   -8.91    1.77   -1.89   11.04   -3.98    5.15   -3.08     .80   -1.41     .11
24.60   19.81  .0002  148   331   -.26  30.28   -2.88    8.00   -8.35   -4.21    1.56     .90    1.35     .10    -.92    1.66   -2.27
                                        22.83   -8.38   -8.04     .32   -3.29   10.07   -4.77    2.89   -2.07     .60    -.40    1.12
24.80   19.27  .0000  141   331   -.33  35.13   -2.62    9.88   -7.36   -6.11    4.11    -.41    1.88    -.00   -2.02    2.13   -2.63
                                        30.60   -7.11  -10.32    1.39   -4.36   10.26   -4.72    1.33   -1.17    -.39     .29    1.12
25.00   17.56  .0027    6   331   -.03  10.28  -10.44    3.97   -7.60   -8.74    3.10    -.45    2.71    -.15    -.88    3.09   -1.38
                                        45.30   -5.85  -10.46    2.10    -.20   11.85   -2.93    3.06     .81     .49    1.78     .86
25.20   16.97  .0001    4   364    .24   6.78   -8.11    5.23   -2.74   -9.89    3.40    1.59    1.76   -2.63    -.42    2.54   -2.28
                                         9.90  -21.05  -22.47   -4.35   -2.61    5.82   -5.87    2.05    -.59   -1.46    -.17    -.57
25.40   16.20 -.0007    4   364    .40  13.84   -7.59   -4.25   -5.58   -5.29    7.20    1.57    -.10   -4.96    -.35    1.34   -3.80
                                         7.36  -11.53  -22.29  -12.76  -10.48    5.02   -5.49    1.62   -3.04   -2.92   -1.59   -3.72
25.60   15.36 -.0004    4   364    .24   6.55    -.48   -4.13   -1.89   -1.38    4.82   -1.09     .84   -7.26   -1.77    3.77   -2.04
                                          .83   -7.83  -14.26   -8.17   -4.89    8.21   -3.87    3.27   -2.25   -5.13   -1.81    -.54
25.80   14.41  .0002    4   364   -.03   1.72    1.52   -1.58     .43    3.52    3.12    -.84   -3.85   -4.10   -1.39    2.88     .60
                                         2.83   -2.24   -2.88   -2.03    1.12    8.19    2.92    2.59   -2.49   -4.10   -1.01    -.54
26.00   13.30 -.0005    4   364   -.02   -.77    1.71     .90     .99    1.75     .20    -.90   -3.09     .39    -.50    3.28    1.00
                                        -6.00   -2.98    -.95     .91    1.89    3.87    1.57    1.69   -2.08   -2.62   -1.43   -1.13
26.20   11.83 -.0005    4   364    .03  -1.64    3.23   -2.28   -3.12   -1.36     .91     .45    -.38    2.89    -.46    4.15     .36
                                        -5.29    1.12    2.40    2.69   -1.42    1.69    -.26    -.44    -.07   -1.17    -.63    -.46
26.40   10.11 -.0004    4   364    .02  -2.69    4.98    -.74   -3.87   -2.82    1.36    -.86    -.70    3.22    -.58     .69    -.22
                                        -6.24    3.93    5.56    4.24   -2.13    2.90   -2.13   -2.03    -.56    1.10    -.07     .98
26.60    7.77  .0004    4   364    .07  -3.26    2.27    2.18   -2.34   -4.85    1.75   -1.22   -4.57   -2.42     .44   -1.47     .76
                                         2.66    3.96    4.95   -1.89    3.12    4.59    -.08    -.97     .23   -1.72     .43    1.57
26.80    5.74  .0006    4   364    .06  -1.63    -.40     .68    -.27   -5.69    -.60    -.62   -2.57    -.72     .66    1.86     .24
                                         9.62     .12    2.71   -4.03    6.93    3.97    1.05    1.60    -.48   -2.99    1.34     .84
27.00    4.71 -.0000    4   364   -.01   3.42    -.44    -.52    -.20   -3.81    -.47    1.21    -.95   -1.24    -.25    1.19     .33
                                          .73   -3.04    1.14   -2.14     .76     .45     .85     .14     .66    -.85    -.36    1.40
27.20    3.89  .0002    4   364   -.03   -.27    -.56   -3.36   -1.02    1.80    2.84    2.65    1.41     .66    -.07    1.63    2.32
                                         3.84     .94    2.19     .98    1.23    1.33    2.58     .93   -1.70    -.72   -1.61   -3.27
27.40    3.04  .0006    4   364   -.03   1.12    1.40    -.11    1.96    1.23     .70     .12    -.14    -.32    1.05     .33    -.41
                                         7.67    1.66    -.29    1.49   -1.29    2.79     .39     .31    -.94    -.33    -.26   -1.57
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                                              OWS-V ISENTROPIC SUMMARY,1971
                                                PROPERTY =SALINITY
                                              FUNDAMENTAL PERIOD = 366 DAYS
LEVEL  F(1)       M  FIRST LAST  A(0)                                     FOURIER COEFFICIENTS X 100
                        OBS.  OBS.
SURF.  34.51   .0001    4  364   .01   10.33   -7.35    -.56    -.57    1.75   -1.11    1.63    2.12   -1.37     .19    1.54   -1.83
                                       14.93   -5.52   -3.47   -1.44   -1.72    3.40    -.71    2.12   -1.97   -1.57   -1.94     .86
22.40  34.32   .0001  228  236  -.00     .37    -.33     .25    -.11    -.04     .15    -.17     .10     .02    -.13     .16    -.09
                                        -.54     .12     .08    -.19     .19    -.11    -.02     .13    -.16     .10     .03    -.13
22.60  34.28   .0002  224  236  -.01    1.63   -1.28     .77    -.23    -.21     .44    -.42     .21     .07    -.28     .31    -.18
                                       -1.96     .24     .44    -.65     .53    -.22    -.12     .34    -.36     .20     .05    -.24
22.80  34.37   .0001  214  268  -.01    2.09    -.46    -.82    1.02    -.38    -.29     .41    -.04    -.28     .11     .46    -.78
                                         .09   -1.42     .93     .13    -.72     .54     .00    -.26     .00     .42    -.42    -.20
23.00  34.36   .0001  207  268  -.01    1.80    -.72    -.31     .73    -.50     .01     .24    -.05    -.24     .15     .36    -.70
                                        -.39    -.93     .89    -.24    -.34     .44    -.12    -.15     .01     .38    -.44    -.09
23.20  34.38   .0002  206  286  -.02    2.59    -.98    -.63    1.03    -.33    -.16    -.07     .25    -.03    -.13     .17    -.39
                                        -.51   -1.44    1.23    -.05    -.54     .19     .11     .13    -.31     .20    -.18     .09
23.40  34.32   .0004  205  291  -.03    3.91   -1.55     .04     .11     .15    -.13     .00     .00    -.02     .09     .01    -.21
                                       -2.49    -.73     .62     .01    -.04    -.13     .12    -.06     .09    -.02    -.09    -.02
23.60  34.32   .0007  185  316  -.05    5.97    -.04     .21    -.54    -.36    -.27     .42     .05     .40    -.27    -.05    -.52
                                       -1.40    -.82    -.76    -.22    -.05     .58     .12     .07    -.20    -.30    -.04     .06
23.80  34.37   .0012  184  321  -.13   10.37    4.04    1.72    -.58   -2.04   -1.13    -.16     .42    1.05     .23     .03    -.71
                                        4.71   -1.12   -2.52   -2.35    -.80    1.10     .79    1.05    -.15    -.44    -.62    -.03
24.00  34.20   .0014  172  325  -.08    6.51    2.90     .32     .11   -2.09     .22    -.30     .52     .35     .17    -.29    -.39
                                       -3.93    2.23   -3.65     .08   -1.49    2.10    -.78    1.36    -.90     .25    -.75     .58
24.20  34.34   .0005  156  331  -.01    4.28    -.32    -.90   -1.99   -1.96     .20     .97     .63    1.15     .13     .09    -.59
                                       -5.11    -.76   -2.75     .44     .17    3.15    -.55    1.49   -1.31     .19   -1.38     .40
24.40  34.53   .0001  153  331  -.03    6.83   -1.66     .70   -3.01   -1.76     .33     .54     .73     .27     .48     .02     .01
                                         .08   -2.31   -2.87     .58    -.57    3.91   -1.47    1.75   -1.09     .38    -.54     .07
24.60  34.69   .0001  148  331  -.09    9.82    -.81    2.53   -2.66   -1.55     .64     .46     .32     .10    -.42     .45    -.59
                                        7.40   -2.77   -2.55    -.05    -.95    3.43   -1.71     .93    -.76     .19    -.07     .48
24.80  34.78  -.0000  141  331  -.11   11.29   -1.00    3.15   -2.41   -2.08    1.37    -.02     .55     .06    -.72     .64    -.74
                                        9.84   -2.42   -3.28     .39   -1.31    3.40   -1.53     .40    -.41    -.11     .08     .46
25.00  34.48   .0009    6  331  -.01    3.06   -3.50    1.32   -2.43   -2.78     .99    -.07     .79    -.05    -.35     .98    -.42
                                       14.60   -1.85   -3.27     .67    -.02    3.72    -.86     .83     .32     .16     .59     .33
25.20  34.56   .0000    4  364   .08    1.92   -2.77    1.66    -.74   -3.04    1.12     .52     .55    -.76    -.21     .79    -.61
                                        2.93   -6.61   -6.98   -1.34    -.87    1.69   -1.75     .55    -.25    -.38     .03    -.17
25.40  34.59  -.0002    4  364   .12    4.17   -2.35   -1.39   -1.68   -1.55    2.15     .52    -.05   -1.44    -.16     .50    -.99
                                        2.04   -3.41   -6.61   -3.95   -3.24    1.41   -1.61     .42    -.94    -.87    -.51   -1.07
25.60  34.60  -.0001    4  364   .07    2.03    -.06   -1.16    -.56    -.38    1.30    -.28     .17   -2.13    -.45    1.13    -.47
                                         .16   -2.25   -4.10   -2.44   -1.47    2.27   -1.24     .93    -.72   -1.51    -.58    -.04
25.80  34.59   .0000    4  364  -.01     .47     .49    -.44     .12    1.03     .82    -.22   -1.05   -1.14    -.37     .77     .22
                                         .52    -.75    -.81    -.55     .32    2.21     .70     .69    -.69   -1.10    -.27    -.16
26.00  34.55  -.0001    4  364  -.01    -.31     .35     .19     .23     .37    -.03    -.24    -.78     .14    -.09     .91     .30
                                       -1.55    -.75    -.16     .42     .54    1.02     .41     .47    -.44    -.56    -.32    -.28
26.20  34.43  -.0001    4  364   .01    -.39     .71    -.54    -.84    -.36     .16     .08    -.17     .55    -.14     .99     .01
                                       -1.43     .29     .57     .79    -.26     .40    -.08    -.04    -.03    -.26    -.13    -.15
26.40  34.29  -.0001    4  364   .01    -.59     .92    -.24    -.88    -.76     .29    -.07    -.18     .62    -.09     .20    -.11
                                       -1.40     .75    1.06    1.03    -.39     .48    -.55    -.34    -.11     .10     .12     .33
26.60  34.08   .0000    4  364   .02    -.62     .39     .41    -.31    -.85     .35    -.38    -.79    -.39     .05    -.28     .05
                                         .24     .46     .94    -.31     .41     .86    -.12    -.20     .11    -.31     .07     .26
26.80  33.98   .0001    4  364   .01    -.27    -.01     .12    -.01    -.86     .00    -.15    -.38    -.18     .05     .32     .00
                                        1.48    -.14     .44    -.70    1.11     .71     .11     .21    -.15    -.42     .29     .09
27.00  34.08  -.0000    4  364   .00     .45    -.06     .05    -.09    -.56    -.02     .14    -.22    -.18    -.08     .16     .07
                                        -.09    -.52     .09    -.41     .07     .02    -.04     .01     .09    -.16    -.11     .21
27.20  34.22   .0000    4  364  -.00    -.08    -.18    -.47    -.28     .29     .52     .39     .28     .02    -.12     .22     .27
                                         .63     .17     .38     .23     .12     .23     .38     .08    -.18    -.10    -.30    -.48
27.40  34.37   .0001    4  364  -.00    -.03     .10    -.04     .24     .17     .10     .01    -.09    -.00     .17     .07    -.12
                                         .75     .02    -.11     .28    -.12     .26    -.09    -.04    -.21    -.05    -.07    -.15
```

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                                                  OWS-V ISENTROPIC SUMMARY,1971
                                                    PROPERTY = DEPTH(M.)
                                                  FUNDAMENTAL PERIOD = 366 DAYS
LEVEL     F(1)      M     FIRST LAST   A(0)                          FOURIER COEFFICIENTS
                          OBS.  OBS.
SURF.    25.01   .0004      4   364    -.83     .59     .08    -.05     .06    -.04     .08    -.03    -.01     .09    -.00     .02    -.01
DENSITY                                        1.32    -.15     .13     .05    -.06     .02    -.02     .00     .04     .04     .00    -.01
22.40     5.00 -.0082   228   236     .47     -.80     .46    -.08    -.18     .23    -.12    -.06     .17    -.15     .03     .10    -.15
                                                .54     .18    -.34     .21     .01    -.17     .18    -.06    -.09     .16    -.12    -.00
22.60     9.00  .0082   224   236    -.40      .70    -.48     .20     .04    -.17     .17    -.08    -.03     .11    -.11     .06     .02
                                               -.65    -.04     .26    -.25     .12     .04    -.13     .13    -.07    -.03     .09    -.10
22.80     4.00  .0164   214   268    -.31      .76   -1.00     .93    -.56     .17     .07    -.25     .41    -.38     .08     .25    -.30
                                              -1.98     .79    -.02    -.42     .49    -.42     .32    -.12    -.21     .41    -.27    -.06
23.00     1.00  .0329   207   268    -.48     1.40   -2.09    1.86    -.85     .17    -.22     .22     .41   -1.01     .69     .26    -.67
                                              -4.18    1.68     .07    -.81     .56    -.33     .65    -.84     .20     .71    -.81     .04
23.20     2.00  .0548   206   286   -1.92     3.46   -2.55    1.46    -.76     .63    -.62     .24     .44    -.91     .74    -.05    -.44
                                              -5.09    1.06     .19    -.32     .28    -.55     .93    -.90     .32     .43    -.67     .21
23.40     6.00  .0712   205   291   -3.95     5.64   -1.99     .63    -.82     .67    -.45     .36     .28    -.97     .71     .03    -.31
                                              -4.19    -.25    -.04     .07     .37    -.44     .72    -.98     .38     .50    -.58     .15
23.60     8.00  .0877   185   316   -6.46     7.38   -1.25    1.78   -1.34    -.02   -1.45     .96    1.20    -.55     .17   -1.09    -.17
                                              -2.65    -.24    -.54   -1.20     .33    -.02    2.10   -1.40    -.08    -.65     .05     .87
23.80     3.00  .0877   184   321   -2.90     5.99   -2.74    -.41   -1.36     .77    -.03    1.59     .40   -1.22    -.43    -.60     .14
                                              -7.79    -.05    -.79    1.38     .53     .67     .22   -1.70    -.50     .33     .34    1.05
24.00     8.00  .1479   172   325  -12.05    12.15     .56     .96   -1.57     .28   -1.19    1.24    -.30    -.72     .06     .44     .22
                                              -1.87   -1.05   -2.19    -.07    -.31     .58     .51   -1.04     .34     .67     .10     .10
24.20    11.00  .1425   156   331  -10.88    12.73     .28    -.23   -2.02    -.42    -.85    1.06     .11    -.90     .83     .64     .66
                                              -3.03   -2.22   -2.88     .55    -.33    1.56     .28    -.50     .35    1.00    -.21    -.42
24.40     5.00  .1836   153   331  -12.30    12.94    2.72   -1.38   -1.16   -1.20    -.78     .92    -.39    -.99     .54     .79    1.00
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                                               -.79   -2.22   -2.68   -1.01     .39     .29     .35   -1.43     .54    1.40    -.14     .36
24.80     9.00  .2356   141   331  -17.67    14.48    6.44   -1.94    -.37    -.83    -.84    2.15   -1.87    -.80    -.26    1.11     .61
                                               -.47   -2.91   -2.69   -1.42     .85     .24     .10   -1.58     .67    1.82    -.10     .52
25.00    11.00  .3890     6   331  -43.74    16.70   12.15    -.73    -.01    1.17    -.16    3.32    -.77   -1.07     .72    1.89     .55
                                              11.72    2.80    2.56     .48    3.11    2.86     .39    -.37    1.83    2.25    1.39    1.03
25.20    78.00 -.0685     4   364  -13.41    24.01   15.17    6.68    3.31     .17     .97    4.33   -1.35   -4.59   -2.44     .76   -2.94
                                             -37.94  -28.50  -18.50   -8.45   -4.89   -3.18   -4.41   -3.90   -1.90   -3.52   -2.47    -.95
25.40   109.00 -.0027     4   364  -22.12    58.60   17.92   -2.80   -3.45   -3.37   -2.62    1.70     .01   -1.78     .93   -1.54   -8.14
                                              -7.22   -5.32  -13.08  -10.42   -4.04    -.06   -7.32   -7.90   -3.07    -.20    3.23    1.65
25.60   123.00  .0548     4   364  -15.17    70.93   15.14    4.28    9.88    -.16    1.90    2.08   -2.19  -14.47   -4.44     .45   -8.08
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25.80   145.00  .1265     4   364    2.22    78.94   14.37    4.65    6.86  -14.33   -1.97    -.17   11.33  -15.65   -2.50    5.61   -8.06
                                              28.47  -24.36  -46.51  -21.64   -2.15    9.28  -20.72   -3.25    1.38  -14.41   -1.83    2.65
26.00   205.00  .1342     4   364    7.38    70.03   11.15    7.55    8.76  -21.64   10.64   -2.96    7.98  -13.41   -1.82    -.14   -5.02
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26.20   290.00  .0959     4   364   -1.03    67.19   11.94   10.90   11.57  -23.36   12.06   -2.46    3.81  -11.47     .86    -.24   -5.03
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26.60   469.00  .5288     4   364-103.62    71.04   12.97   14.17   17.80  -15.57   13.67     .68    5.69   -7.02     .32    1.54    -.37
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26.80   583.00  .5123     4   364-110.67    68.02   13.62   18.50   18.73  -16.03   13.93    1.63    2.95   -6.90    1.74    -.89   -1.26
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27.00   691.00  .5397     4   364  -97.07    64.37   14.64   17.77   14.29  -17.36   12.63    1.46    2.20   -5.17    1.95   -1.32   -2.14
                                              93.79   -3.19  -19.56  -10.21    9.62   22.61   -2.86    2.71    2.73   -6.04    1.56    5.84
27.20   867.00  .4822     4   364  -96.53    60.98   10.05   15.44   10.59  -15.87   14.27    8.43    7.59   -2.16    4.72    -.70   -2.90
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                                              68.73  -17.62  -20.62   -8.67   12.55   11.89     .55   -5.40   -3.54   -8.66   -1.07    7.04
```

APPENDIX II

Expected values of Ocean Weather Station V temperatures, °C × 100, (top panel); salinities, ‰ × 100, (middle panel); and depths, m, (bottom panel) at sigma-*t* levels evaluated at the first day of each month for the years 1966-71.

Values were computed by using the tabulations of Appendix I in Equation (3). Only the first three harmonics in the series were evaluated for 1966 and 1967. All 12 harmonics in the series were evaluated for 1968 through 1971.

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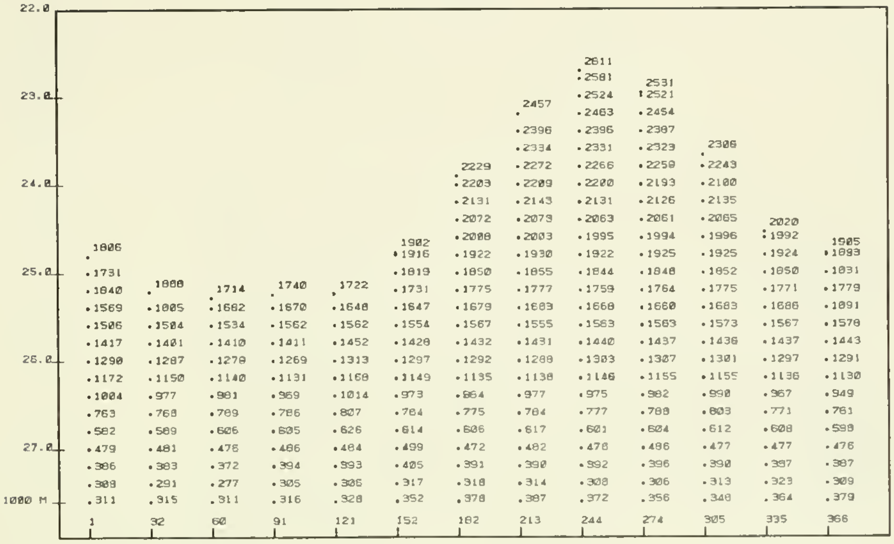
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2457 2396 2334 2272 2209 2143 2079 2003 1930 1855 1777 1683 1555 1431 1288 1138 977 784 617 482 390 314 387
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2306 2243 2180 2135 2065 1996 1925 1852 1775 1683 1573 1436 1301 1155 990 803 612 477 390 313 348
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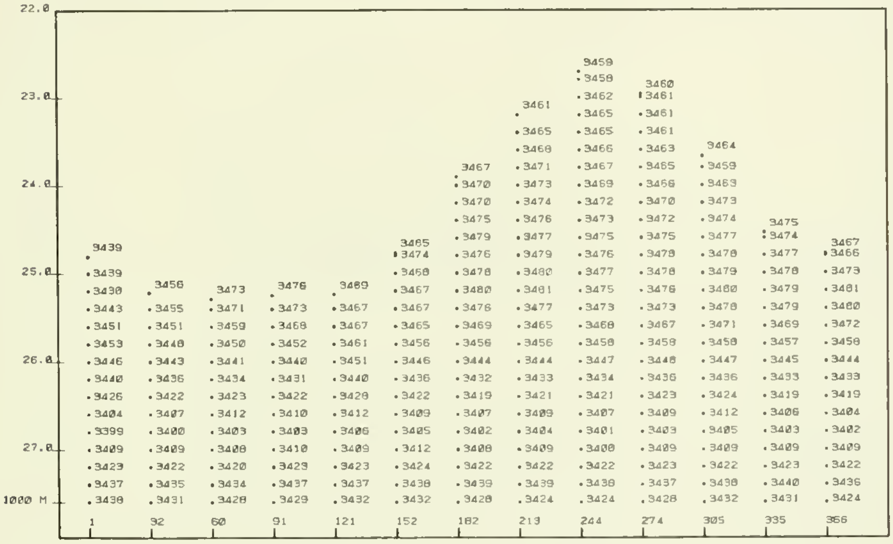
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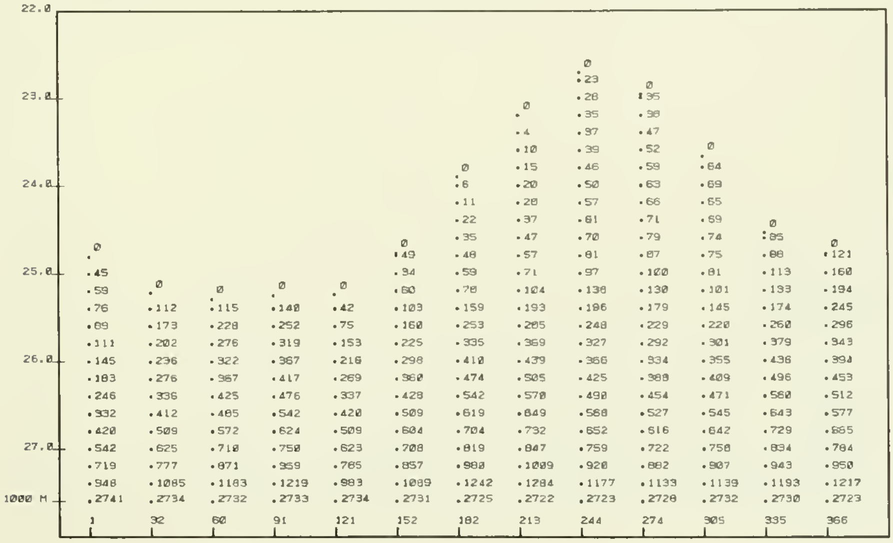
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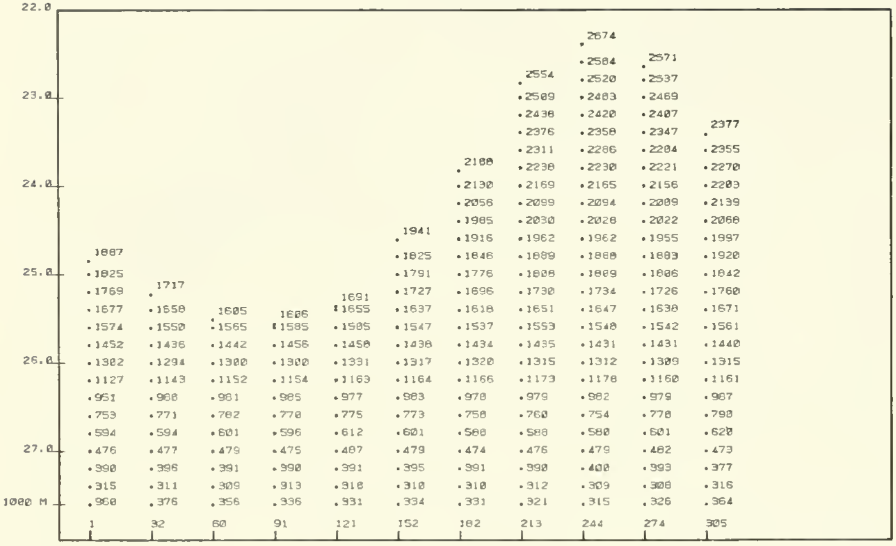
1967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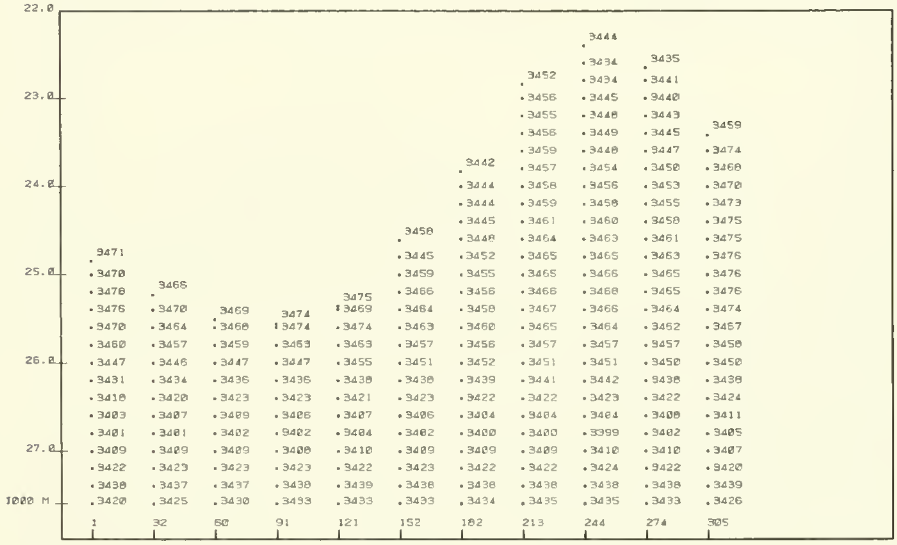
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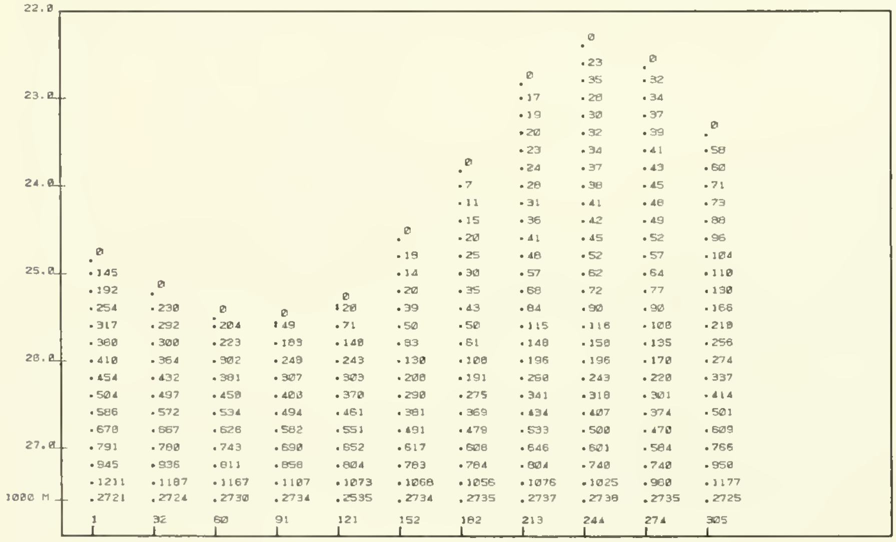
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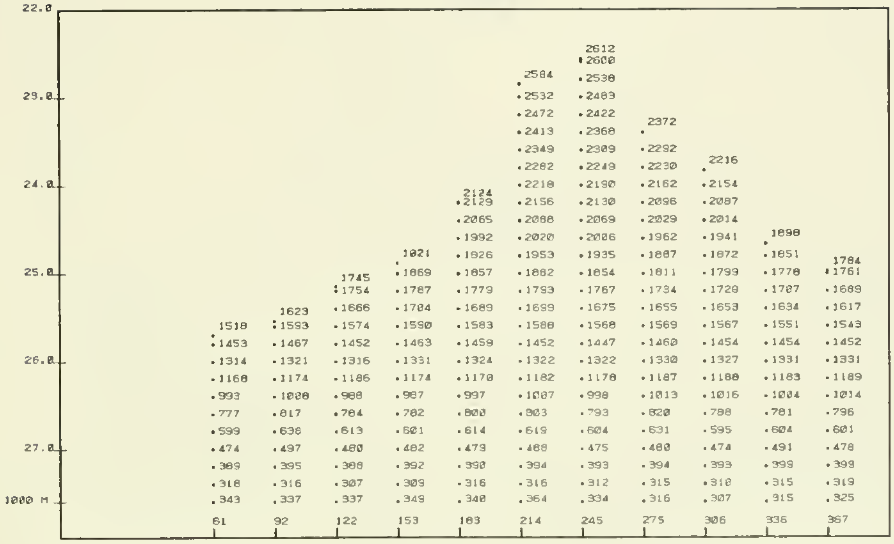
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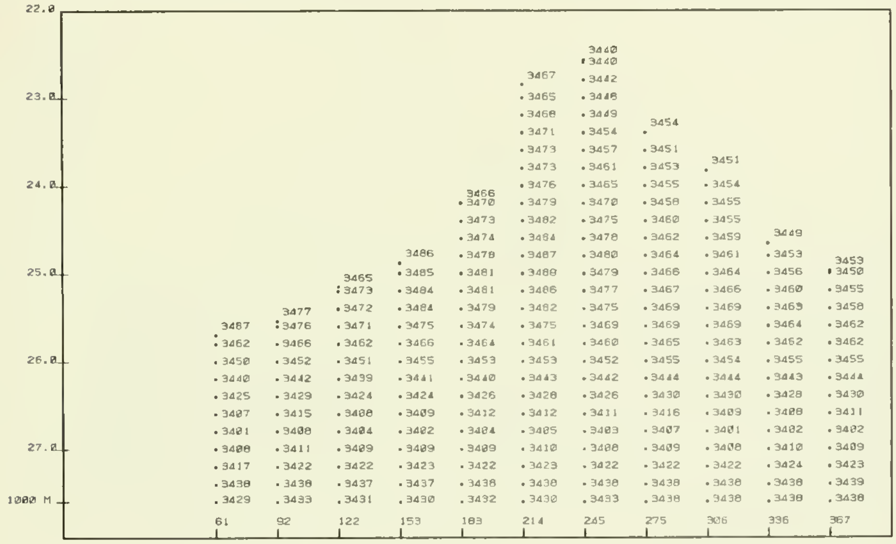
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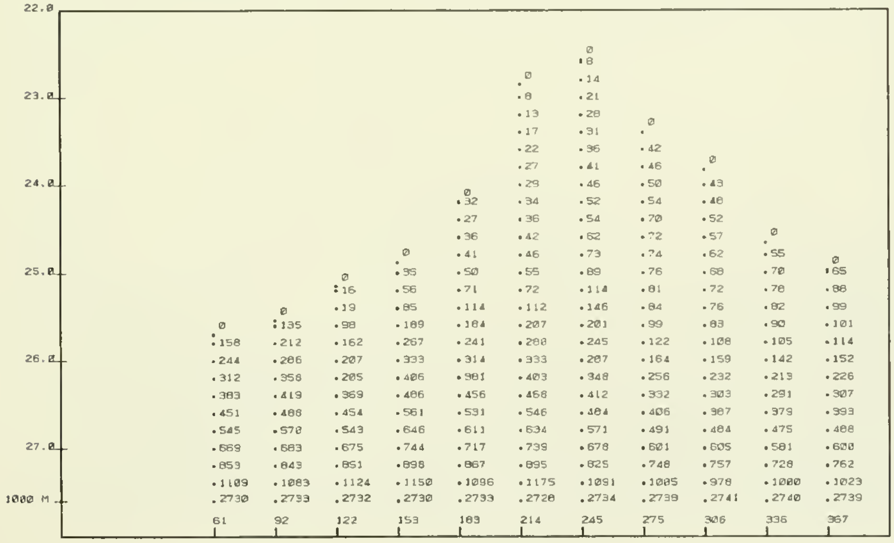
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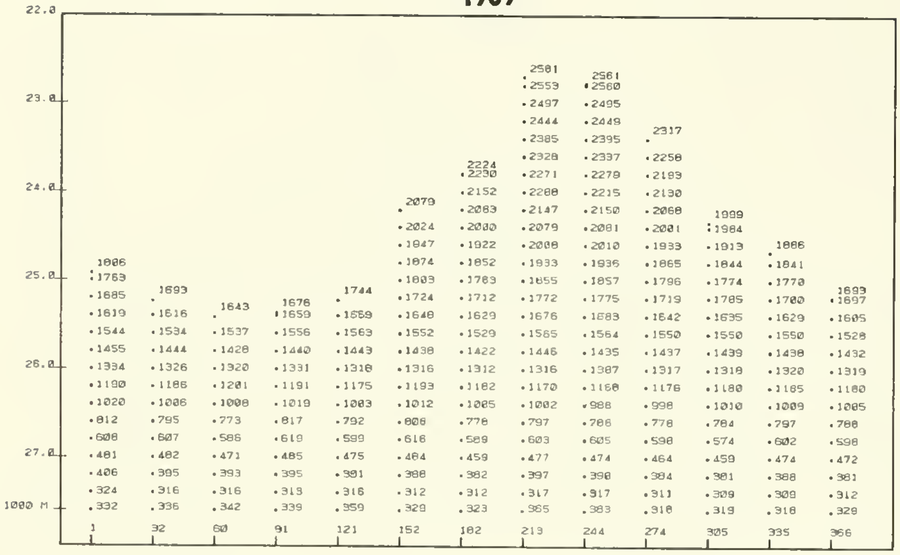
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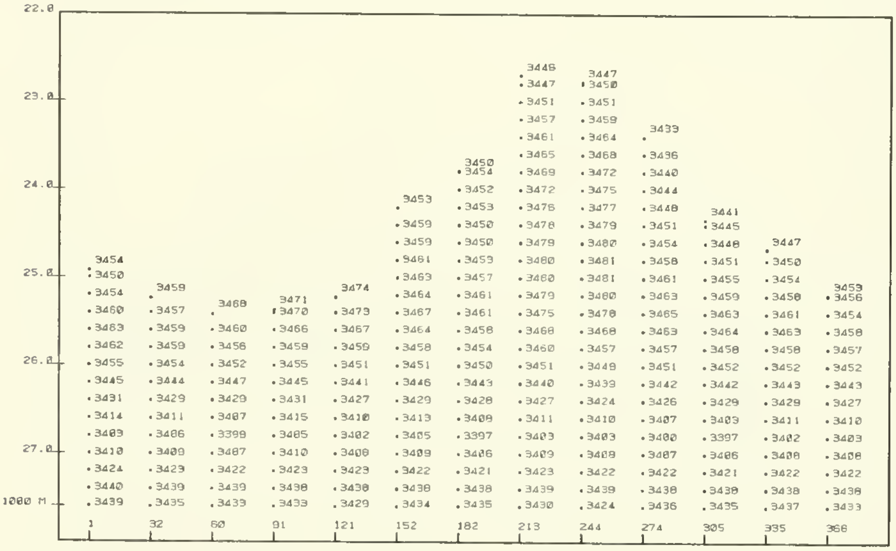
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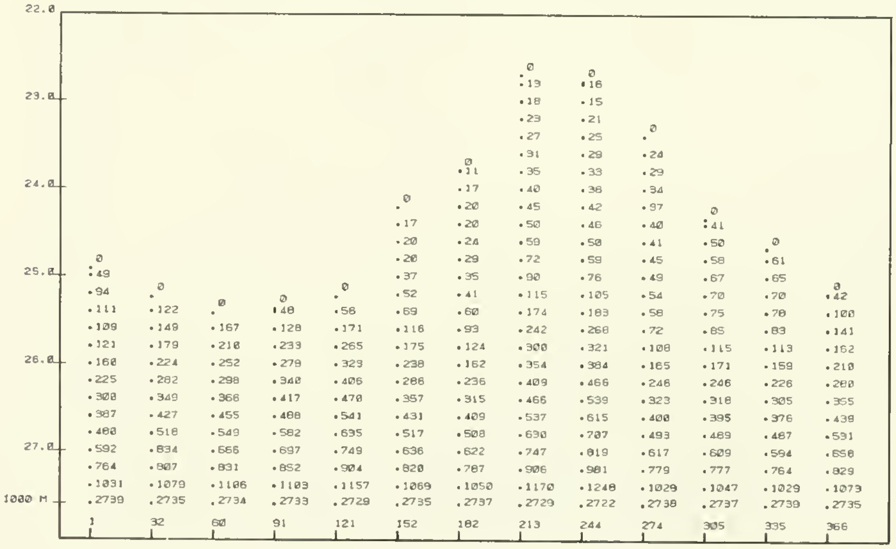
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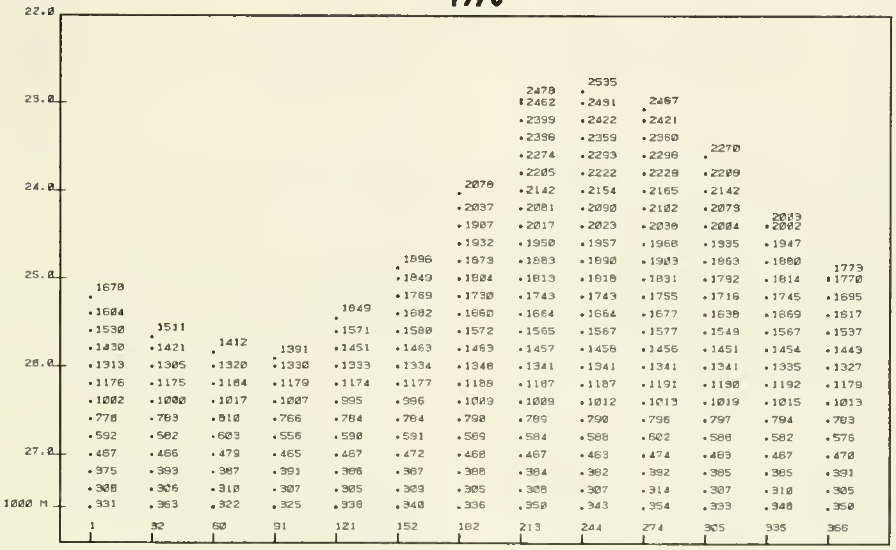
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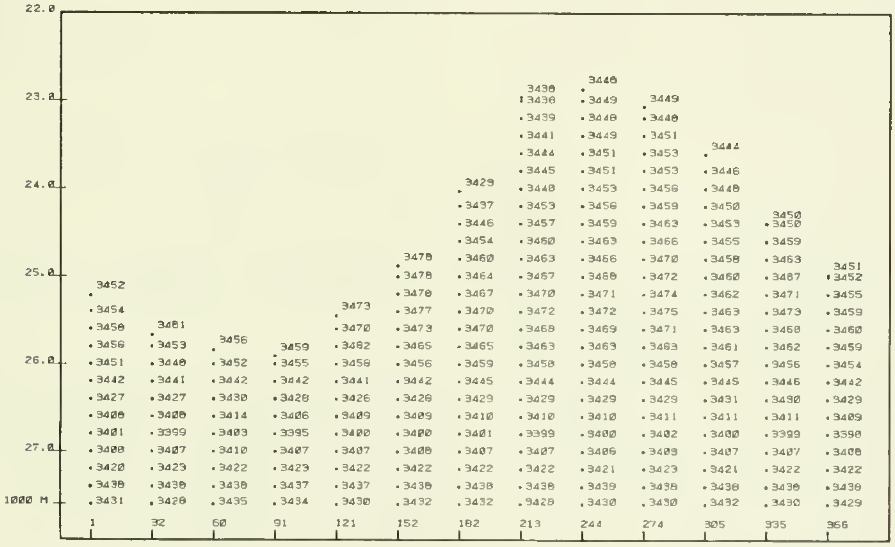
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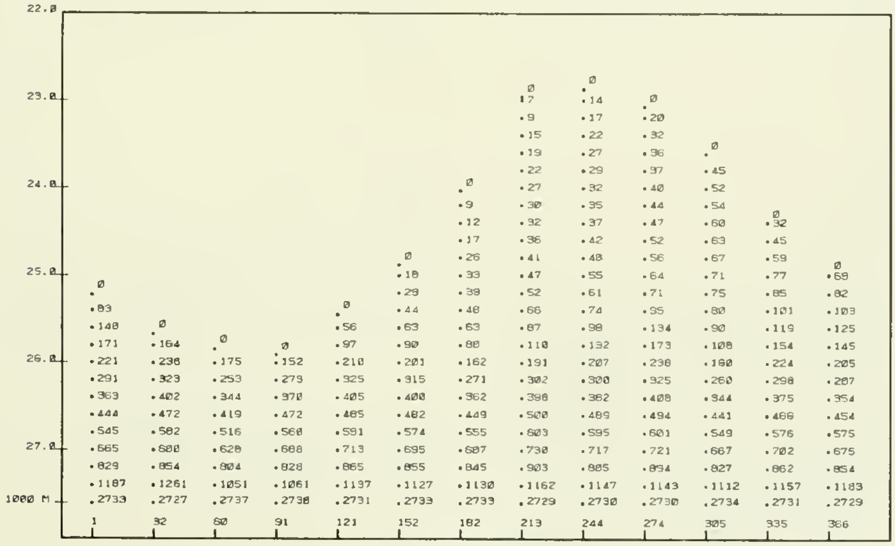
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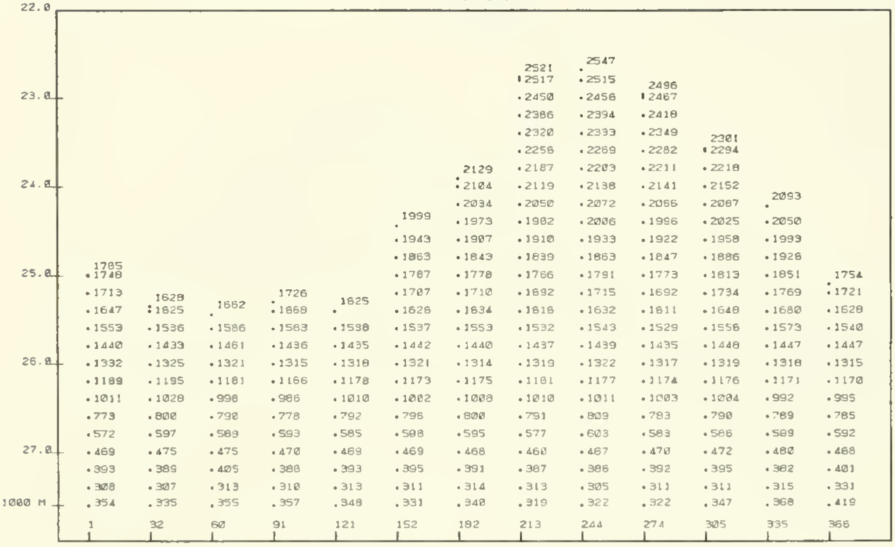

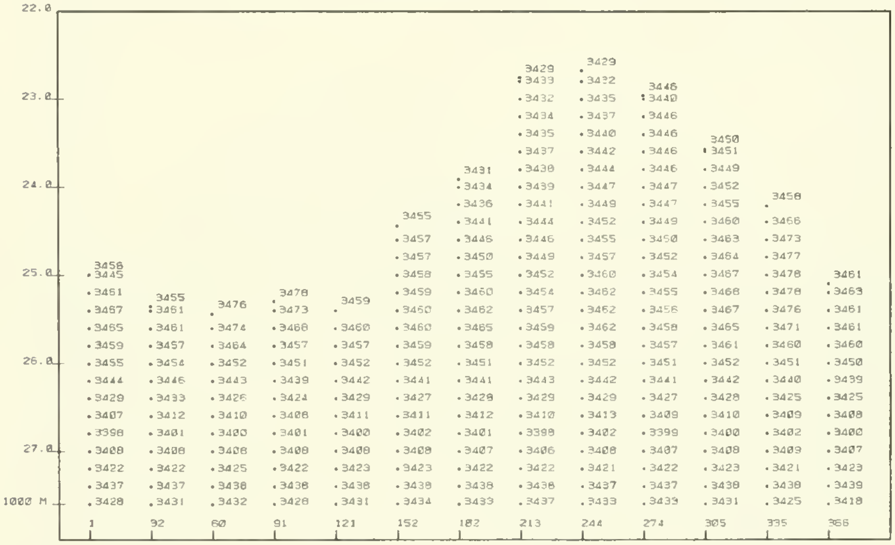

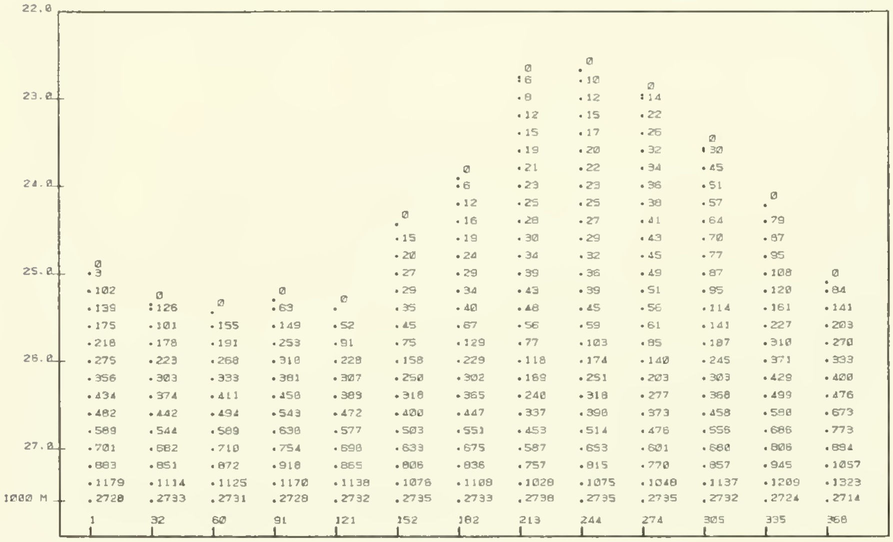

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